Appendix 6

Biological Assessment

DRAFT
Biological Assessment of Federally Listed Marine Mammals under National Marine Fisheries Service Jurisdiction for the Kodiak Airport for Proposed Runway Safety Area Improvement Project

Prepared for

Federal Aviation Administration
Alaska Department of Transportation and Public Facilities

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1 EXECUTIVE SUMMARY

The purpose of this biological assessment (BA) is to review the proposed Kodiak Airport (Airport) runway safety area improvements in sufficient detail to determine to what extent the proposed action[1] may affect threatened and endangered species and their critical habitat. Species evaluated in this BA are listed in Table 1. This BA has been prepared in accordance with legal requirements set forth under Section 7 of the Endangered Species Act (ESA) (16 U.S. Code [U.S.C.] 1536 [c]), and follows the guidelines for environmental analysis established in Federal Aviation Administration (FAA) Order 1050.1E change 1, *Environmental Impacts: Policies and Procedures*; FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*; and the accompanying FAA *Environmental Desk Reference for Airport Actions*.

Table 1. Federally Listed Species Under NMFS Jurisdiction with Potential to Occur in the Action Area

Species	Listing Status	Designated Critical Habitat	Determination
Steller sea lion (*Eumetopias jubatus*)	Endangered (West of 144° W)	Yes	Not likely to adversely affect
Fin whale (*Balaenoptera physalus*)	Endangered	No	No effect
Humpback whale (*Megaptera novaeangliae*)	Endangered	No	Not likely to adversely affect

The purpose of the projects proposed by the Alaska Department of Transportation and Public Facilities (ADOT&PF) is to bring the Airport runways into compliance with the FAA runway safety area (RSA) standards to the extent practicable. The FAA requires that public use airports have RSAs, which serve as buffers should aircraft deviate from the runway during an accident or emergency. The size standards of these RSAs are based on the types of aircraft served at each runway (FAA 2004). The runway system at the Airport consists of three runways, two of which (Runways 07/25 and 18/36) do not include the length of RSA necessary at the runway ends to provide adequate overrun or undershoot protection. The FAA is the lead federal agency for this project and is preparing an environmental impact statement (EIS) to evaluate the environmental consequences of enhancing RSAs on Runways 07/25 and 18/36 at the Airport. This BA describes the combination of the two proposed actions (one for each runway). The proposed actions will meet the project purpose and need (to provide RSA improvement and safety enhancement) while minimizing detrimental environmental impacts.

For Runway 07/25, the proposed action will extend the RSA at Runway end 25 by 600 feet and install an engineered materials arresting system (EMAS) within that 600-foot RSA expansion. For Runway 18/36, the proposed action will extend the RSA at Runway end 36 to the south by

[1] The FAA has prepared a draft environmental impact statement for the proposed improvements to runway safety areas at Kodiak Airport. From among a range of possible improvement options, FAA has identified a preferred alternative for each runway. These are referred to as the proposed action in this BA.

600 feet, shift the runway south by 240 feet, and install an EMAS on existing pavement at the north end of Runway 18. Each of these runway ends currently abuts nearshore marine waters of St. Paul Harbor within Chiniak Bay. Because work will occur adjacent to and in marine waters, it has the potential to affect ESA-listed marine species and critical habitat that occur in the area. This BA, prepared by SWCA Environmental Consultants (SWCA) on behalf of the FAA, addresses the proposed action and species under management authority of the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) in accordance with Section 7(c) of the ESA of 1973, as amended. A separate BA has been prepared and submitted to the U.S. Fish and Wildlife Service (USFWS) addressing listed species under that agency's management authority (SWCA 2012).

2 PROJECT DESCRIPTION

2.1 Project Area

The Airport is located in Sections 14 and 15, Township 28 South, Range 20 West (Seward Meridian) in Kodiak, Alaska. The Project Area consists of the Airport and the nearshore marine waters in the immediate vicinity the proposed RSA extensions described below (Map 1). The Project Area comprises the area within which federally listed species will be directly affected by construction disturbance or indirectly affected by long-term changes in habitat or water chemistry due to potential project-related changes in distribution of the Buskin River freshwater plume. Data on federally listed and candidate species' use of the Project Area were obtained by conducting point-count surveys from the runway ends. Twenty surveys were conducted over the course of one year. A detailed description of survey methods is available in the *Terrestrial Vegetation and Wildlife, and Marine Mammals and Seabirds Technical Report* (Technical Report; SWCA 2009a) prepared for the EIS.

2.1.1 Runway End 18

A barrier bar and nearshore shoals are located at the mouth of the Buskin River and Runway end 18 (see Map 1). The barrier bar directs the river flow north to its mouth in Chiniak Bay, which is approximately 1,500 feet north of Runway end 18.

Both field survey data and NOAA ShoreZone data (NOAA 2012) were used to classify shoreline habitats in the Project Area. Although ShoreZone data are only available for the intertidal zone, ShoreZone mapping protocols provide definitions for supratidal and riparian areas (Harney et al. 2008). The supratidal and riparian area along the barrier bar near Runway end 18 is classified as a *beach storm ridge*, which refers to an area that receives occasional marine influence and is often vegetated with grasses and trees, suggesting it is relatively stable. The area further north near the Buskin River mouth is more indicative of a *beach berm*, which refers to an area that receives frequent marine influence, contains more mobile sediment, is unvegetated, and may be found in the intertidal zone. The plant community within the vegetated area along the barrier bar is composed primarily of an *Elymus* forb meadow.

The marine side of the Buskin River barrier bar is a low-gradient beach that is mostly sand with gravels. It is bounded on the south by armor rock at Runway ends 18 and 25 (see Map 1). The high tide line is marked by decomposing kelp and algae that have drifted ashore. This microhabitat provides food and shelter for a variety of invertebrates, including species that juvenile salmonids may use as prey, such as amphipods, worms, and insects (Morley et al. 2012; Sobocinski et al. 2010). Lower down on the beach, cobbles and large gravels are strewn in a band over the sandy surface. Offshore there are some finer sediments. This area is exposed to the greatest amount of fresh water and silt from the Buskin River. The subtidal area continues from the intertidal beach as a flat sandy area, gently sloping toward the bay. Bottom substrates are mostly sand, and there are some small clumps of kelp attached to larger substrates such as cobble.

The intertidal area provides important habitat for various fish species. For example, juvenile salmonids use the nearshore areas near the mouth of the Buskin River during and after smolting, generally March through July. During June 2008 field surveys, juvenile chum (*Oncorhynchus keta*) and pink salmon (*O. gorbuscha*) were numerous in the sandy intertidal areas along the Buskin River barrier bar, especially along the middle and southern portions of the bar. Habitat along the barrier bar is suitable for Pacific sand lance (*Ammodytes hexapterus*; Robards et al. 1999), flatfish (Holladay and Norcross 1995), smelt, and sculpins (Mecklenburg et al. 2002).

Sandy nearshore habitats like those at the base of Runway end 18 support various kinds of fish, including prey species for sea lions and whales. Potential prey species for fin and humpback whales (*Balaenoptera physalus* and *Megaptera novaeangliae*) from nearshore habitats and subtidal areas include capelin (*Mallotus villosus*), Atka mackerel (*Pleurogrammus monopterygius*), and Pacific herring (*Clupea pallasii*; NMFS 2000). The Steller sea lion (*Eumetopias jubatus*) is known to prey on salmonid species, Pacific sand lance, capelin, Atka mackerel, and Pacific herring (58 *Federal Register* [FR] 45269).

2.1.2 Runway End 25

An armor rock embankment extends below Runway end 25. The supratidal and riparian area at Runway end 25 is composed mostly of an armor rock embankment. The vegetation is composed of *Elymus* grassland, *Elymus* forb meadow, Sitka alder (*Alnus sinuata*), salmonberry (*Rubus spectabilis*), and elderberry (*Sambucus racemosa*).

At the base of the embankment is a narrow, sandy intertidal area with a gentle slope similar to the marine side of the Buskin River barrier bar. The shallow subtidal area contains substrates of cobble, large gravel, and shell debris. Lower down on the beach, most of the largest cobbles are covered with barnacles and occasional clumps of rockweed (*Fucus gardneri*), indicating the bottom surface is stable and does not move with waves or currents. The inshore area is densely covered with algae, including kelp.

Of the runway ends surveyed, the area from Runway end 25 to Runway end 29 had the greatest diversity of substrates and density of aquatic vegetation. The substrate complexity may in part explain the wider diversity of algae and invertebrate species documented in this region compared to other parts of the Project Area. Algae provide increased habitat complexity for fish by offering food sources and places for cover. Some of the fish and invertebrate species that may use the area off Runway end 25 are prey species for Steller sea lions.

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Map 1. Project Area.

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2.1.3 Runway End 36

Finny Beach is located near the base of Runway end 36 (see Map 1). The intertidal area on the north end of the beach within the Runway end 36 RSA footprint is extremely steep, and the substrate is composed of large slate boulders. In this area, armor rock extends from the base of the runway into the water. The upper beach in this area is covered with large gravel and chunks of concrete that have washed out of the bank above. The substrate transitions from the large armor rock boulders to gravel, then from sand to fine gravel as the beach progresses to the south. Although the main beach is relatively well-protected, there is little evidence of algae beyond the armor rock slope, indicating that substrates at the beach are mobile. At the furthest southern point of the beach, a rocky intertidal point extends out into the bay. The rocks are covered with dense areas of rockweed and patches of acorn barnacles and Pacific blue mussels (*Mytilus trossulus*).

The subtidal area south of Runway end 36 is mostly sand, with isolated areas of algae-covered (mostly with rockweed) cobbles or bedrock. Large drifts of algae were observed in this area during the 2008 surveys (SWCA 2009b).

The intertidal area within the proposed fill footprint for this action is mostly armor rock. The intertidal area near outside the proposed fill footprint is mostly gravels and sand and is suitable for Pacific sand lance (Robards et al. 1999), flatfish, smelt, and sculpins (Mecklenburg et al. 2002).

Subtidal habitat near Runway end 36 is similar to the subtidal habitat at Runway end 18 but lacks any freshwater influence. Sandy nearshore habitats like those found in the subtidal areas at the base of Runway end 36 support various kinds of fish, including prey species for sea lions and whales. Potential prey species for fin and humpback whales from nearshore habitats and subtidal areas include capelin, Atka mackerel, and Pacific herring (NMFS 2000). The Steller sea lion is known to prey on salmonid species, Pacific sand lance, capelin, Atka mackerel, and Pacific herring (58 FR 45269).

2.2 Definition of the Action Area

The Action Area expands beyond the Project Area and consists of a 63,000-acre area comprising the proposed fill footprints adjacent to the Airport and the surrounding areas of Chiniak Bay and its sub-bays: St. Paul Harbor, Womens Bay, Middle Bay, and Kalsin Bay (Map 2). Chiniak Bay is contiguous with and thus physically, chemically, and biologically connected to the nearshore waters adjacent to the Airport where the RSAs will be constructed. Furthermore, construction of the RSAs will require barging underlayer rock and armor rock from off of the island. Given the potential for barge traffic to physically affect federally listed species, Chiniak Bay is considered an appropriate Action Area for this consultation. Data on federally listed and candidate species' use of the Action Area were obtained by conducting boat-based surveys of Chiniak Bay. Surveys were conducted in February, May, and September of 2008. These surveys were designed in coordination with Douglas Burn and Angie Doroff of the USFWS, and Angie Doroff participated in all three surveys. Detailed information on the design of these surveys is provided in the Technical Report (SWCA 2009a).

2.3 Proposed Action

2.3.1 Proposed Action Description

The runway system at the Airport consists of three runways: 07/25, 11/29, and 18/36. Runway 11/29 meets current FAA design standards, but Runways 07/25 and 18/36 do not have the length of RSA necessary at the runway ends to provide adequate overrun or undershoot protection. The ADOT&PF proposes to bring the Airport runways into compliance with FAA RSA design standards to the extent practicable.

In general, RSAs are rectangular areas that are centered on the runway, measure 500 feet wide along the length of the runway, and extend 1,000 feet beyond each runway end. In areas where standard size RSAs cannot feasibly be developed off the runway ends, engineered materials arresting systems (EMAS) can be installed. An EMAS consists of pre-cast, crushable, cellular cement blocks that slow or arrest the movement of aircraft that move beyond the end of a runway. The type of aircraft operating at a given airport determines airport-specific RSA design standard dimensions and the runway length needed for those aircraft. The RSA design standards for the Kodiak Runways 18/36 and 07/25 are based on the Boeing 737-400 aircraft.

The existing RSA for Runway 07/25 on the west runway end is 500 feet wide and extends 1,000 feet in front of the landing threshold. However, there is no safety area in front of the Runway 07/25 landing threshold on the east runway end, a deficiency of 1,000 feet from design standards. The existing RSA for Runway 18/36 is 500 feet wide and contains no additional distance beyond the end of either runway (i.e., the RSA is deficient the full 1,000 feet on both runway ends).

This BA describes the combination of the two proposed actions (one for Runway 07/25 and one for Runway 18/36). The proposed actions will meet the project purpose and need (to provide RSA improvement and safety enhancement) while minimizing detrimental environmental impacts.

Construction of the RSAs will require approximately 719,000 cubic yards of fill, including gravel for the embankments, medium-size underlayer stone, large-size armor stone, crushed aggregate base course, and sub-base course (DOWL HKM 2009). The source of these materials has not been determined. The FAA cannot dictate to the ADOT&PF which material source must be used, nor can ADOT&PF stipulate a source in advance of a construction contract. Any new source of construction material developed as a result of the airport project, or expansion of a commercial source beyond its permitted limits, would be subject to environmental permitting under applicable state and federal laws and regulations. ADOT&PF would ensure that NMFS is consulted regarding any potential effects to listed species prior to development of a new materials source, or expansion of an existing source for the purpose of constructing runway safety areas at Kodiak Airport. Through its general contract provisions, ADOT&PF would require its contractor to:

1. Acquire any permits and licenses required to complete the RSA project that are not acquired by ADOT&PF and to abide by those permits and licenses.
2. Provide qualified professionals to collect data or perform studies necessary to acquire permits for the use of sites not previously permitted.

3. Contact all government agencies having possible or apparent permit authority over that area.
4. Obtain all required permits, clearances, and licenses from those agencies, including but are not limited to Alaska Pollutant Discharge Elimination System General Permit, State Historic Preservation Officer approval, Title 16 Material Site Reclamation, and Temporary Water Use Permits; Department of Environmental Conservation Section 401 Certification, Solid Waste Disposal Site and Construction Camp Permits; Department of Fish and Game Special Area Permits; U.S. Fish and Wildlife Service Threatened and Endangered Species clearance; U.S. Army Corps of Engineers Section 404/Section 10 Permits; city or local government development permits and flood hazard permits; and the permission of the property owner or lessee.

For the purposes of the EIS and this BA, it is assumed that gravel for the embankments will come from an on-island source and be delivered, by truck, to the site. The use of Kodiak-area fill sources will require hauling operations for 45 to 90 days, 10 hours a day (DOWL HKM 2009). Haul routes will be located along the Kodiak Island road system and on existing Airport access roads. Alternately, gravel may be barged to the work sites (as described in more detail below). Embankment materials will be placed by conventional end dump methods from the existing embankments.

Underlayer and armor stone will come from an off-island source and be barged to the construction area. Transportation of underlayer and armor stone will require 10 to 20 barge trips over the construction period. Armor rock will be placed into its final location with a crane or loader (DOWL HKM 2009). Currently, there are one or two large vessels and 10 to 20 small vessels traveling in and out of Kodiak via the Chiniak Bay ship channel on a daily basis. If all fill materials (armor rock and gravel) are barged to the site and small barges are used for project construction, approximately 400 barge trips will be required. This will result in the addition of approximately one barge per day to current boat traffic in Chiniak Bay.

Construction will take place over the course of approximately three years and will be completed in 2015. Construction will be phased so that in-water work will not occur on more than one runway at a time. It is anticipated that improvements to Runway 07/25 will be initiated first, with improvements to Runway 18/36 to be implemented upon completion of work on Runway 07/25. Work will also be scheduled to minimize impacts to operations by large aircraft, such as Alaska Airlines' 737s and the U.S. Coast Guard's C-130s. For these aircraft, off-peak season is typically from November to March, and work during this time will have the fewest impacts on their operations (DOWL HKM 2009). Some construction activities, such as preparation of the finished surfaces (e.g., sub-base, crushed aggregates, and paving) will need to be completed during the summer, in coordination with the ADOT&PF, FAA, and the U.S. Coast Guard.

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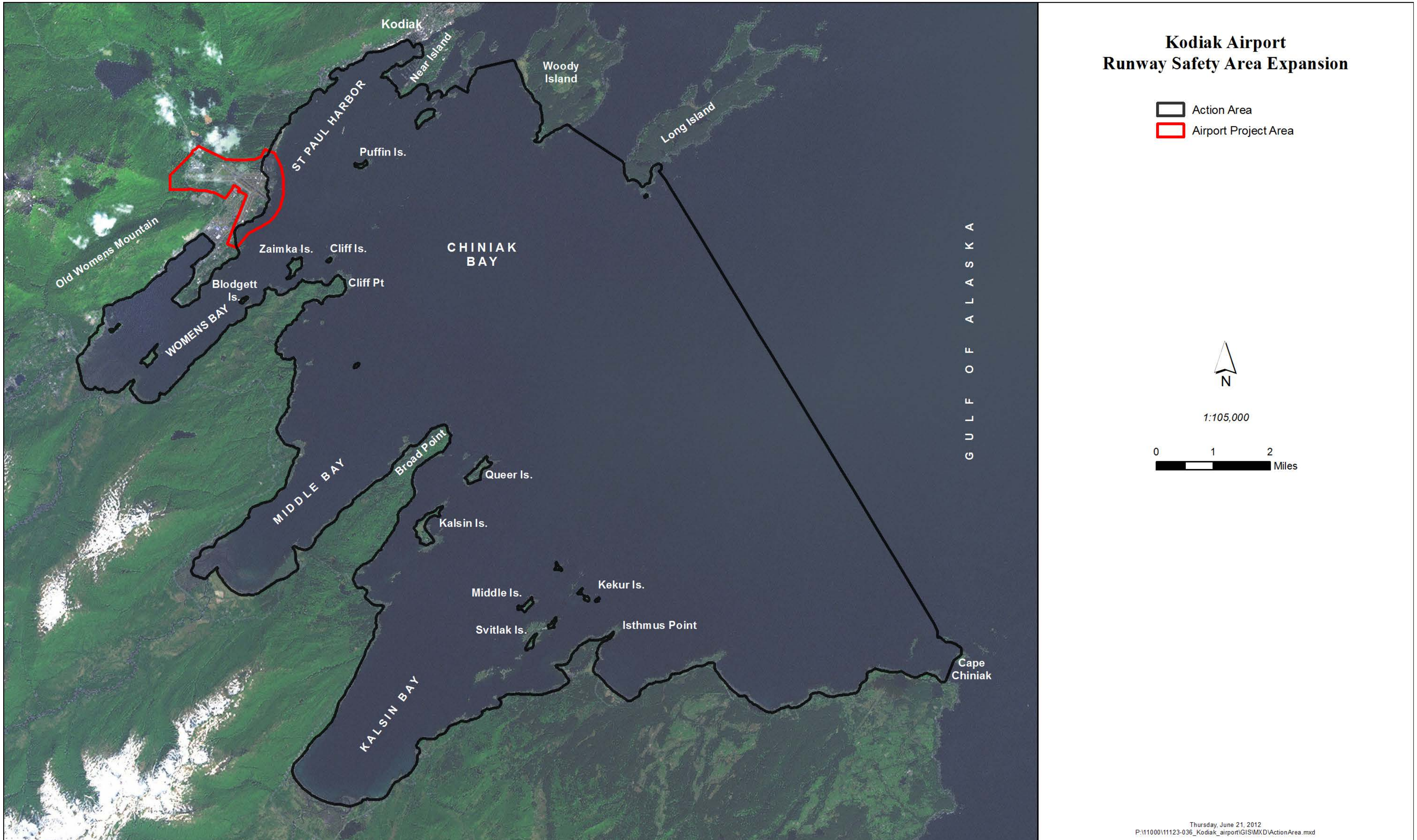

Map 2. Action Area.

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2.3.1.1 RUNWAY 07/25 ACTION

The proposed action for Runway 07/25 will enhance the RSA at the east end of the runway through an extension into St. Paul Harbor (east of the Airport) and the use of EMAS. Fill will be placed off Runway end 25 to create a landmass 600 feet long by 500 feet wide. The Airport's existing runway length of 7,542 feet will be maintained. The Runway end 25 EMAS bed will be approximately 170 feet wide and 385 feet in length, installed on pavement with a minimum setback of 35 feet from the runway threshold. The site design will also include sufficient area around the perimeter of the EMAS bed footprint to allow emergency vehicle access.

The EMAS will provide a 70-knot stopping capability on Runway end 25 for the runway's design aircraft. The existing RSA will be enhanced for aircraft overruns on Runway end 25 (i.e., for takeoffs to the east), the primary operational flow of the Airport for departures, providing an equivalent level of safety for aircraft overruns as that offered by a traditional graded 1,000-foot RSA. The expanded landmass beyond Runway end 25 will also meet FAA standards for undershoots by providing 600 feet of RSA.

Approximately 256,932 cubic yards of fill will be required to construct the new landmass needed to support the EMAS. The potential environmental impacts related to the Runway 07/25 proposed action will be associated with the short-term construction impacts of building into marine waters, and the loss of marine habitat from the placement of this fill to construct a 600-foot landmass expansion on Runway end 25.

2.3.1.2 RUNWAY 18/36 ACTION

The proposed action for Runway 18/36 will enhance the RSA at the north and south end of Runway 18/36 through a 600-foot-long by 500-foot-wide landmass extension at the south (beyond existing Runway end 36) and a shift in the runway location 240 feet to the south. An EMAS bed approximately 170 feet wide and 165 feet long will be placed beyond Runway end 18 (north), installed on existing pavement with a minimum setback of 35 feet from the runway threshold. The EMAS bed will provide a 40-knot stopping capability on Runway end 18 for the runway's design aircraft.

The existing runway length of 5,013 feet will not change, but the runway end thresholds will be shifted 240 feet south of their current locations. This action will provide 360 feet of undershoot protection for landings from the south to Runway end 36 and 240 feet of undershoot protection for landings from the north to Runway end 18. This action will also provide 40-knot stopping capability for overruns beyond Runway end 18 and will provide 360 feet of overrun protection for landings and takeoffs to the south.

Approximately 462,081 cubic yards of fill will be required to construct the new 600-foot landmass extension to the south beyond Runway end 36, shift the runway 240 feet, and install a 40-knot EMAS at the north end of the runway. The potential environmental impacts related to this action will be associated with the short-term consequences of fill placement into St. Paul Harbor and the long-term changes resulting from lost habitat and new landmass in the marine environment. This action avoids placing any fill north of the existing runway toward the Buskin River.

2.3.2 Best Management Practices and Conservation Measures

Implementation of the proposed project will include a variety of conservation measures and best management practices (BMPs). Final proposed conservation measures will be determined following agency input and analysis of cost and feasibility by FAA and ADOT&PF. Proposed conservation measures are expected to reduce or eliminate project-related impacts and avoid adverse effects to listed species and critical habitat. Where appropriate, conservation measures will be implemented using an adaptive management approach. BMPs will be used to minimize impacts to listed species during construction.

Conservation measures and BMPs for the Kodiak Airport project include the following:

- Wildlife observers will ensure listed and candidate species are protected by adhering to the USFWS's *Observer Protocols for Fill Placement and Dredging* in the marine environment (USFWS 2012a). The observer protocol will be re-evaluated following each construction season. No changes to the observer protocol will be made without review and approval by USFWS or NMFS, as applicable.
- Fill materials will be obtained from existing permitted sources (along the road system, if possible) and will be clean (i.e., will contain minimal fine particles such as silt and clay) to minimize sediment releases and turbidity outside of the fill zone.
- Fill materials will be free of invasive species.
- Armor rock will be evaluated by pH testing to ensure compatibility in the marine environment, thereby facilitating colonization of the outer fill material by marine species similar in quality and quantity to species using the existing armor rock in the Project Area.
- A construction stormwater pollution prevention plan (SWPPP) and a construction oil spill prevention and response plan will be prepared to avoid or minimize discharges of sediment or hydrocarbons during construction.
- Silt curtains will be the primary method of containment at both runway ends. If silt curtains are determined to not adequately contain fine sediments during fill activities, other techniques will be used to minimize sedimentation dispersion in the marine environment, such as using alternative fill placement methods or washing the fill. These alternative methods will be developed for and documented in the SWPPP. If methods included in the SWPPP are not successful, the SWPPP will be modified to identify alternative methods for sediment containment, and NMFS will be provided with an opportunity to review the revisions prior to implementation.
- Material barges will not be grounded in kelp stands.
- Project-related barge travel in the Action Area will avoid areas with high densities of ESA species to the extent practicable. Boat and barge operations will follow USFWS's *Boat Operation Guidance to Avoid Disturbing Sea Otters* (USFWS 2012b) to minimize impacts to marine mammals.
- Barges used for construction will follow standard BMPs for vessels to minimize the potential for oil or fuel spills (such as having an oil spill emergency plan). The only oil or fuel associated with barging of construction materials would be the fuel tanks used to operate the tug that would guide the barge to the construction site. The barge would not carry fuel or oil tanks.

- Ballast water and hulls on armor rock transport barges will be free of invasive species.

3 SPECIES DESCRIPTIONS

The species considered in this BA were identified in a July 29, 2009 letter from Robert D. Mecum (Acting Administrator, NMFS Alaska Region) to R. Spencer Martin (Principal Ecologist, SWCA). The July 29 letter identified the following ESA-listed marine mammal species as occurring in the vicinity of the Action Area: Steller sea lion, fin whale, and humpback whale. These species and their status in the Action Area are described in the sections below.

The letter also stated that several federally listed Pacific salmon stocks range throughout the North Pacific, but that the occurrence of listed salmonids in the Action Area is highly unlikely. Given the low probability that members of listed salmon stocks occur in Chiniak Bay or will be affected by the proposed actions, these species are not discussed further in this BA. For an assessment of potential project-related impacts to local salmon stocks and essential fish habitat, please refer to the Draft Kodiak Airport EIS and the associated essential fish habitat assessment, which are being submitted to NMFS under separate covers.

As indicated in the July 29 letter, marine mammal species not listed under the ESA are afforded protection by the Marine Mammal Protection Act. NMFS has identified the minke whale (*Balaenoptera acutorostrata*), killer whale (*Orcinus orca*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), Dall’s porpoise (*Phocoenoides dalli*), harbor porpoise (*Phocoena phocoena*), and harbor seal (*Phoca vitulina*) as nonlisted marine mammal species that are occasionally documented within the Action Area. For an assessment of potential project-related impacts to these species, please refer to the EIS.

3.1 Steller Sea Lion

3.1.1 Species Account

The Steller sea lion occurs across the North Pacific from northern Japan, through the Kuril Islands and Okhotsk Sea of Russia, to the Aleutian Islands, central Bering Sea, southern coast of Alaska, and southward through the Pacific Northwest coast to the Channel Islands off the coast of California. The world population is separated into two stocks divided at 144° W longitude or Cape Suckling, Alaska, based on differences in mitochondrial DNA and differing population trends in the two regions (Angliss and Outlaw 2007). Kodiak Island falls within the range of the Western stock.

NMFS published an emergency rule listing the Steller sea lion as a threatened species on April 5, 1990, under provisions of the ESA. Populations west of 144° W longitude were reclassified as endangered on June 4, 1997 (62 FR 30772), due to substantial population declines.

Based on 2004–2005 data, the population size of western Steller sea lions in Alaska is estimated to be approximately 45,000 animals (NMFS 2008). This population showed an increase of approximately 3% per year between 2000 and 2004, the first recorded increase since the 1970s.

The most recent data from incomplete 2007–2008 non-pup surveys suggest that the overall population trend for the western distinct population segment is either stable or slightly declining (NMFS 2008).

Steller sea lions are opportunistic predators that feed on a variety of fishes and cephalopods. Prey species tend to vary seasonally and geographically. Preferred prey species in the Gulf of Alaska include walleye pollock (*Theragra chalcogramma*), Pacific herring, capelin, Pacific sand lance, Pacific cod (*Gadus macrocephalus*), salmon, and cephalopods such as squid and octopus (NMFS 2008). Walleye pollock and flatfishes make up the majority of the Kodiak sea lion diet (Calkins and Goodwin 1988). Steller sea lions have also been known to prey on other pinnipeds such as the harbor seal, fur seal (*Callorhinus ursinus*), ringed seal (*Phoca hispida*), and possibly sea lion pups, but these prey are considered to be a minor, supplemental component to their diet.

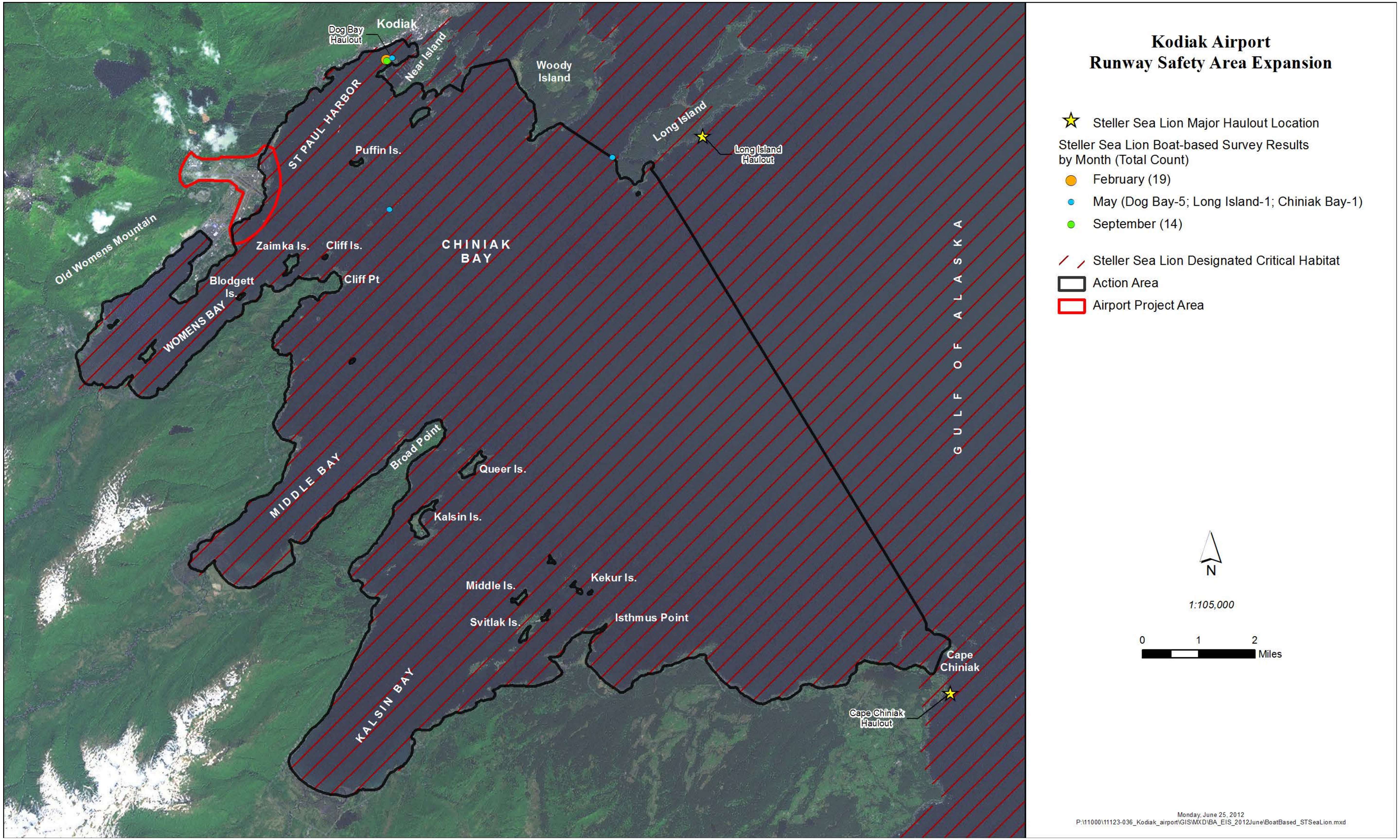
3.1.2 Species Status in the Action Area

No Steller sea lions were observed during the Airport point-count surveys. In total, 40 Steller sea lions were observed during the boat-based surveys: 19 individuals were observed in February, seven in May, and 14 in September 2008. All but two of these individuals were observed out of the water, resting on the Dog Bay haulout in Kodiak's Inner Harbor (Map 3). A detailed description of survey methods is available in the Technical Report (SWCA 2009a) prepared for the EIS.

3.1.3 Designated Critical Habitat

Steller sea lions gather on well-defined, traditionally used haulouts and rookeries to rest and breed, respectively. All major haulouts and major rookeries are considered critical habitat. Critical habitat includes a terrestrial zone that extends 3,000 feet landward from the baseline or base point of each major rookery and major haulout in Alaska as well as an air zone that extends 3,000 feet above it. West of 144° W longitude, critical habitat includes an aquatic zone that extends approximately 23 miles (20 nautical miles) seaward in state and federally managed waters (50 Code of Federal Regulations [CFR] Part 226). Kodiak Island and the Action Area are located west of 144^{o} W longitude.

The nearest major rookery to the Project Area is located on Marmot Island, approximately 38 miles northeast of the Airport. Although there are no rookeries within inner Chiniak Bay, there are two major haulouts that occur on the edge of the Action Area (i.e., on the outer edge of Chiniak Bay). All major haulouts in the area of designated critical habitat are listed in the *Federal Register* (50 CFR Part 226). One of these is located on Long Island, approximately 11 miles east-northeast of the Airport, and one is on Cape Chiniak, approximately 15 miles southwest of the Airport (NOAA 1997). The entire Action Area, including nearshore waters within the Project Area, falls within the 23-mile aquatic buffer around these two haulouts and is thus considered critical habitat (see Map 3). One nontraditional, human-made haulout that is not included as designated critical habitat is located in Dog Bay in the Kodiak boat harbor on Near Island. The Dog Bay haulout was created out of empty dock to discourage Steller sea lions from hauling out on active harbor floats and to limit interactions between humans and sea lions. A small number of individual sea lions inhabit Dog Bay year-round and frequent the harbor and nearby cannery docks..



Map 3. Steller sea lion boat-based survey results and critical habitat in the Action Area.

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3.2 Fin Whale

3.2.1 Species Account

Within Pacific U.S. waters, fin whales are found seasonally off the coasts of North America and Hawaii and in the Bering Sea during the summer (Angliss and Outlaw 2007). NMFS recognizes three stocks of fin whales, including the Alaska (Northeastern Pacific) stock, the California/Washington/Oregon stock, and the Hawaii stock. The Alaska stock consists of fin whales that occur along the central Alaskan coast, including the Kodiak Archipelago. Most populations of fin whale are considered to be highly migratory, occupying cold temperate and polar waters in the spring and summer and warm temperate and tropical waters in the autumn and winter (Nowak 2003).

The fin whale has been listed as endangered under the provisions of the ESA since the Act’s passage in 1973. The species was listed due to population declines resulting from modern commercial whaling practices. Current threats to the fin whale include habitat modification, disease or predation, overuse for recreational commercial or educational purposes, and inadequacy of existing regulatory mechanisms (NMFS 2006).

The fin whale is a pelagic species and is seldom found in water less than 656 feet deep. Fin whales are baleen whales and feed primarily on zooplankton such as shrimp-like creatures in the Euphausiidae family, other crustaceans, and various kinds of small fish (various authors cited in Nowak 2003). The fin whale uses a swallowing method of feeding in which the animal turns on its side with its head above water and its mouth open. After taking in a great amount of food organisms and water, water is forced out of the mouth with the tongue, leaving food trapped in the baleen.

3.2.2 Species Status in the Action Area

During surveys conducted in July and August of 2001–2003, fin whales were sighted in waters east of Kodiak westward to Samalga Pass (located in the central Aleutian Islands), and the population was estimated at approximately 1,650 whales in this area (Zerbini et al. [in press] cited in Angliss and Outlaw 2007). Fin whales are rarely seen in Chiniak Bay, with the only known occurrences in the deep water at the mouth of the bay (Baraff 2006). Previous whale surveys in Chiniak Bay have occurred during the summer and fall (Witteveen et al. 2006). Although fin whales have been observed by Wynne and Witteveen during winter tagging work in Uganik Bay on the northwest side of Kodiak Island (Briana Witteveen, Marine Mammal Research Technician, University of Alaska, personal communication with Catherine Foy, SWCA, November 10, 2007), there is no known documented use of Chiniak Bay by fin whales in the winter and spring. There were no fin whales observed during the boat-based surveys of Chiniak Bay conducted for the Airport EIS.

3.2.3 Designated Critical Habitat

No critical habitat has been designated for the fin whale.

3.3 Humpback Whale

3.3.1 Species Account

The humpback whale is distributed seasonally throughout the world's oceans but does not occur in arctic waters of the North Pacific. The historical feeding range of the North Pacific population includes coastal and inland waters around the Pacific Rim from Point Conception, California, north to the Gulf of Alaska and the Bering Sea, and southwest to the Kamchatka Peninsula and the Okhotsk Sea (various authors cited in Angliss and Outlaw 2007). Kodiak lies in a zone of overlap between the Western and Central North Pacific stocks of humpback whales. The Western North Pacific stock primarily winters off Japan and summers primarily west of Unimak Pass, though they may extend as far east as Kodiak Island. The Central North Pacific stock of humpback whales spends winter and spring in the Hawaiian Islands and migrates to northern British Columbia, Southeast Alaska, Prince William Sound, and west to Kodiak in the summer and fall (Angliss and Outlaw 2007). The Central North Pacific stock is further divided into three separate feeding aggregations: southeastern Alaska, Prince William Sound, and Kodiak.

The minimum population size estimated for Central North Pacific stock is approximately 3,700 whales (Angliss and Outlaw 2007). Earlier data indicated that the Central North Pacific stock increased in abundance between the early 1980s and early 1990s. Population trend estimates for the Central North Pacific stock indicate that this group is increasing at a rate of 6.6% to 7.0% per year (Mobley et al. 2001 and Zerbini et al. [in press] cited in Angliss and Outlaw 2007). The humpback whale has been listed as endangered under the provisions of the ESA since the Act's passage in 1973. It was listed due to population declines resulting from modern commercial whaling practices. Current threats to the humpback whale include habitat modifications; disease or predation; human-related disturbance, injury, and mortality; and inadequacy of existing regulatory mechanisms (NMFS 1991).

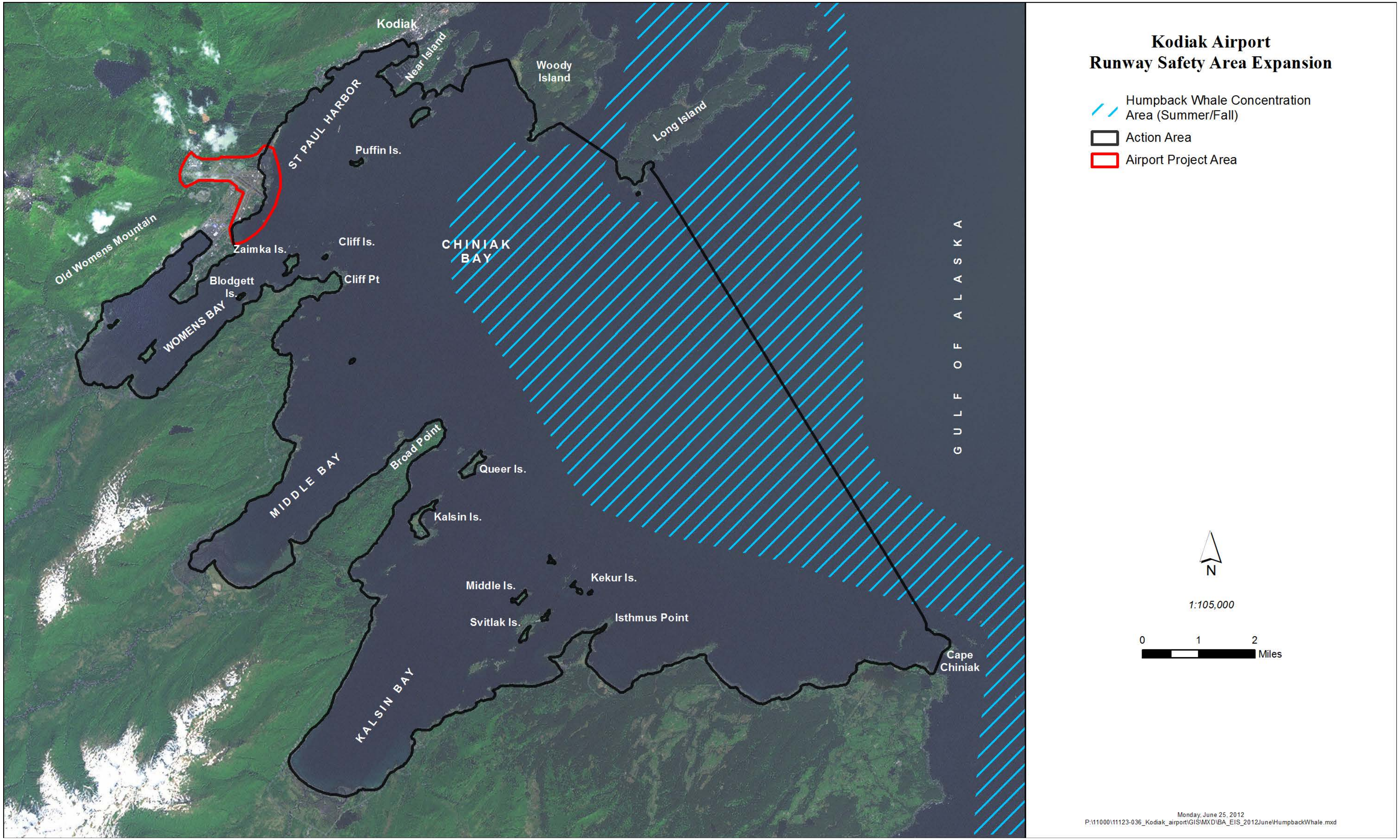
Humpback whales are baleen whales and feed primarily on euphausiids and small, schooling fish such as Pacific herring, eulachon (*Thaleichthys pacificus*), Pacific sand lance, capelin, and walleye Pollock.

3.3.2 Species Status in the Action Area

Humpback whales range widely throughout Chiniak Bay and are known to occur there in the summer and fall, with peak abundances occurring in June and July (Baraff 2006; Witteveen et al. 2006) (Map 4). Humpback whale use of Chiniak Bay is expected to be low in the winter and spring because most animals migrate southward to warmer waters during the winter. Nevertheless, humpback whales have been observed by Wynne and Witteveen in Uganik Bay (on the northwest side of Kodiak Island) during the winter (B. Witteveen, personal communication, November 10, 2007), so it is possible that humpback whales could occur in Chiniak Bay on a year-round basis. No humpback whales were observed during the boat-based surveys of Chiniak Bay conducted for the Airport EIS.

3.3.3 Designated Critical Habitat

No critical habitat has been designated for the humpback whale.



Map 4. Humpback whale concentration area in the Action Area.

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4 ENVIRONMENTAL BASELINE

Although the impacts described in this section are limited to the Action Area, it should be noted that marine mammals are highly mobile and wide ranging. Thus, human and environmental factors outside of the Action Area may affect the same individuals and populations that occur within the Action Area.

4.1 Steller Sea Lion

Threats to Steller sea lions rated as having a high or medium negative impact on the recovery of this species consist of environmental variability, competition with fisheries, predation by killer whales, and toxic substances (NMFS 2008). The extent to which these factors apply to Steller sea lions in the Action Area is summarized below.

Environmental Variability: Potentially High

Periodic shifts in atmospheric and oceanic conditions, including a reduction in the biomass and quality of sea lion prey species, may have major effects on the productivity and structure of ecosystems used by Steller sea lions, potentially affecting sea lion populations (NMFS 2008). However, the manner and mechanism by which shifts in atmospheric and oceanic conditions and altered prey populations may affect Steller sea lions in the Action Area is poorly understood.

Competition with Fisheries: Potentially High

Steller sea lions may be impacted by competition with commercial fisheries through a reduction in the quality and quantity of prey species (NMFS 2008). In 2007, approximately 19 million pounds of walleye pollock were harvested in the waters off Kodiak Island (Mattes and Stichert 2008). A reduction in quality and quantity of sea lion prey species may lead to a reduction in sea lion reproduction and survival, and potentially carrying capacity. There are no observer data available on incidental mortality of Steller sea lions associated with pollock trawling around Kodiak Island (Allen and Angliss 2009).

Predation by Killer Whales: Potentially High

Killer whales are a natural predator of Steller sea lions; however, there is uncertainty in the scientific community concerning the potential for killer whales to affect the size of sea lion populations. Although killer whales are known to take sea lions in the vicinity of the Dog Bay haulout, the effects of killer whale predation on the Steller sea lions in the Action Area as a whole are poorly understood.

Toxic Substances: Medium

Chronic exposure to toxic substances could cause damage to sea lion DNA, RNA, and cellular proteins. Sea lions may become contaminated with polycyclic aromatic hydrocarbons (PAHs) through exposure to oil spills. PAHs can be absorbed through dermal contact, direct ingestion, or by ingestion of contaminated prey species (NMFS 2008). There is no information available on the effects of exposure of Kodiak populations of Steller sea lions to toxic substances.

4.2 Fin Whale

Threats to fin whales rated as having a medium negative impact on the recovery of this species consist of climate and ecosystem change, competition for resources, direct harvest, and ship strikes. There are no threats to the fin whale rated as having a high negative impact on species recovery (NMFS 2006). The extent to which these factors apply to fin whales in the Action Area is summarized below.

Climate and Ecosystem Change

It is possible that there will be a decrease in ocean productivity and a change in water temperature in the northern oceans as a result of climate change. These changes could cause a decrease in prey and habitat availability for the fin whale. This threat could impact the fin whales in the Action Area.

Competition for Resources

There is the potential for competition for food resources between fin whales and other baleen whales. There is no evidence of competition affecting fin whales in the Kodiak area.

Direct Harvest

There is no known direct harvest of fin whales in the waters off Kodiak Island (Allen and Angliss 2009).

Ship Strikes

The potential exists for fin whales to be struck by or collide with ships. Data compiled worldwide documenting collisions between ships and large whales suggest that fin whales are struck more frequently compared to other species. There has been, however, only one known fin whale ship strike in Alaskan waters since 1997 (NMFS 2006). There have been no reported collisions between ships and fin whales in the waters surrounding Kodiak Island.

4.3 Humpback Whale

Threats to the humpback whale recovery with potential to occur in the Action Area consist of interactions with commercial fishing operations and entanglement in marine debris, anthropogenic noise and coastal development, and ship strikes and disturbance from vessel traffic.

Fishery Interactions and Entanglement in Marine Debris

The potential exists for humpback whales to become entrapped or entangled in active fishing gear, causing injury, debilitation, or death. Entanglement or entrapment in active fishing gear is the most frequently identified source of human-caused mortality or injury to humpback whales

(NMFS 1991). There have been no reports of entrapment or entanglement of humpback whales around Kodiak Island (Allen and Angliss 2009).

Anthropogenic Noise and Coastal Development

Underwater sound transmissions that are low frequency and high energy, such as those produced by industrial and military activities, ship traffic, and scientific experimentation, have the potential to disturb whales. Humpback whales may be impacted by sound transmissions in the marine environment that can cause damage to ears and body tissue, interfere with the whales' ability to hear other sounds of interest, or cause displacement. Individuals may be more vulnerable to disease if the noise is chronic; however, it is important to note the difficulty in measuring stress responses in free-ranging whales. Anthropogenic noises associated with construction activities, such as blasting, pile driving, or using explosives, could also affect humpback whales. Additionally, noise from planes and helicopters may be another source of aerial noise disturbance to humpback (NMFS 1991). There is no information available on the effects of coastal development or anthropogenic noise on the humpback whales in the Action Area.

Ship Strikes and Disturbance from Vessel Traffic

The potential exists for humpback whales to be struck or collide with ships. The incidence of whale-ship collisions may increase with an increase in the number of vessels. Disturbance to humpback whales may also be caused by industrial, fishing, and military vessel traffic (NMFS 1991). There have not been any reported ship strikes of humpback whales in the Action Area (Allen and Angliss 2009).

5 EFFECT OF THE ACTION

Table 2 presents the acreages of impacts by habitat type resulting from RSA improvements on nearshore waters adjacent to the Airport, which provide habitat for marine mammal prey species and potentially suitable habitat for Steller sea lion. The acreages shown in Table 2 are the maximum impact areas for the proposed actions for each runway described in detail in Section 2.3. Table 2 also presents the acreages of marine mammal habitat potentially affected by the proposed actions.

Table 2. Acres of Direct Impact to Each Habitat Type in the Project Area

Potential Direct Effects	Runway 07/25 Action: Extend Runway end 25 RSA by 600 feet and install 70-knot EMAS	Runway 18/36 Action: Extend Runway end 36 south by 600 feet, shift Runway end 18 south by 240 feet, and install 40-knot EMAS on existing pavement	Combined Runway Actions
Loss of supratidal beach/riparian habitat	0.7	2.1	2.8

Loss of intertidal shoreline habitat	0.8	1.5	2.3
Loss of subtidal habitat	8.3	7.6	15.9
Loss of kelp and algae (in intertidal and subtidal habitats)	9.1	2.4	11.5
New intertidal and subtidal armor rock	0.9	1.2	2.1

Source: SWCA (2009b).
Notes: EMAS = engineered material arresting system.
* = All numbers are gross, not net, acreage.
Accuracy: ±0.1 acre. Totals may be off slightly due to rounding.
Supratidal/riparian defined as area above and adjacent to mean higher high water (MHHW) (9.53 feet) containing natural substrate or vegetation.
Intertidal defined as area between MHHW and mean lower low water (MLLW) (0.76 foot).
Subtidal defined as area below MLLW.

5.1 Steller Sea Lion

5.1.1 Direct Effects

Approximately 62,687 acres within the Action Area are designated critical habitat for the Steller sea lion (see Map 3). Direct, negative effects to the Steller sea lion associated with the proposed action include loss of approximately 18.1 acres of marine intertidal and subtidal habitats known to support prey species used by sea lions, including salmonid species, Pacific sand lance, capelin, Atka mackerel, and Pacific herring. Although the area of habitat lost represents <0.1% of potentially suitable foraging habitat in the Action Area, its removal could have minor direct, negative effects on the Steller sea lion resulting from reduced food resources within the Project Area. Given that impacts to walleye pollock in the Action Area are expected to be negligible, there will be no effect on Steller sea lion primary prey species. Although adverse impacts are expected on pink and chum salmon, these species are not a substantial part of the Steller sea lion diet in the Action Area (SWCA 2009c). Consequently, impacts to Steller sea lion resulting from effects on its prey will be negligible.

Disturbance associated with construction noise, reduced water quality due to construction-related increases in turbidity, and disturbance due to barge traffic could have a minor direct effect on Steller sea lions during RSA construction. Barges associated with transportation of gravel fill, underlayer stone, and/or armor rock will bring materials to the runway ends, floatplane ramp, or other docking and off-loading site(s). Although the associated increase in vessel traffic could affect individual sea lions, implementation of a conservation measure to avoid areas with high concentrations of Steller sea lions will minimize the potential for negative effects related to disturbance of haulouts and ship strikes. Vessels will follow USFWS *Boat Operation Guidance to Avoid Disturbing Marine Mammals* (2012b) to minimize effects to marine mammals.

5.1.2 Indirect Effects

Although Steller sea lions will be displaced from the Project Area during construction, it is likely that they will return once construction-related activities have ceased. It is possible that some individuals will have to use lesser-quality habitats during the construction period. The lesser-quality habitats will have less prey available for the Steller sea lion, which could temporarily reduce individual sea lion fitness (Bender et al. 1998). This will have minor, short-term negative effects on the Steller sea lion population using the Project Area.

5.2 Fin Whale

5.2.1 Direct Effects

Because fin whales are rarely observed in Chiniak Bay and, when present, are likely to occur only in the deeper, outer portions of the bay over 10 miles from the Airport, direct effects from the Airport project are not expected to occur. It is unlikely that noise, either airborne or underwater, would directly harm fin whales or displace them because they are unlikely to use waters in the project area. In addition, observer protocols stipulated by USFWS (2012a) will be implemented within a 300-meter hazard area. No blasting will occur in the Project Area.

Data compiled worldwide documenting collisions between ships and large whales suggest that fin whales are struck more frequently compared to other species (NMFS 2006). Barges associated with transportation of gravel fill, underlayer stone, and/or armor rock will bring materials through Chiniak Bay to the runway ends, floatplane ramp, or other landing site(s) to be determined. Although the associated increase in vessel traffic could affect individual fin whales, implementation of a conservation measure to avoid areas with high concentrations of ESA species will minimize the potential for negative effects associated with ship strikes. Vessels will follow USFWS *Boat Operation Guidance to Avoid Disturbing Marine Mammals* (2012b) to minimize effects to marine mammals.

5.2.2 Indirect Effects

Because fin whales are rarely observed in Chiniak Bay and in the project area, indirect effects of the proposed action on fin whales are not expected.

5.3 Humpback Whale

5.3.1 Direct Effects

Direct effects to the humpback whale associated with the proposed action include loss of habitat for prey species and disturbance associated with construction noise and barge traffic. The proposed action will result in the loss of approximately 18.1 acres of marine habitat used by humpback whale prey species. This area represents <0.1% of potentially suitable prey production habitat in the Action Area. Although loss of this habitat is expected to cause a localized decrease in fish and invertebrate production, these effects are expected to be short term. Potential impacts to humpback whale prey production and construction-related disturbances are anticipated to be localized and short-term.

Implementation of the proposed action could reduce existing whale use of the project area on a short-term basis because of construction noise and disturbance, which will result in direct effects on the species. It is unlikely that noise, either airborne or underwater, would directly harm diving species like the humpback whale because observer protocols stipulated by USFWS (2012a) will be implemented within a 300-meter hazard area. No blasting will occur in the Project Area.

Effects to humpback whales from barging of construction materials would be the same as for fin whales.

5.3.2 Indirect Effects

The short-term decline in production of small fish and invertebrate prey associated with RSA construction will be unlikely to have a substantive effect on humpback food availability within the Action Area. This is not expected to adversely affect humpback whales.

5.4 Cumulative Effects

Cumulative effects include future local, private, state, or tribal actions that are reasonably certain to occur in the Action Area. Future federal actions that are not related to the proposed action are not considered in this cumulative effects analysis because they will require separate Section 7 consultations under the ESA. The Action Area is located within the Kodiak Island Borough, which covers 4.8 million acres of land, including tidelands and submerged lands. Nearly 71% of the borough is federally owned (3.4 million acres), and much of that area consists of public lands managed by the National Park Service and the USFWS. Of the remaining land in the borough, approximately 675,000 acres (14.1%) is owned by native corporations and villages, 639,000 acres (13.3%) is state land, 70,000 acres (1.5%) is owned by the Borough, and the remaining 16,000 acres (0.3%) is private land.

Current and future actions that are non-federal and that may affect federally listed species in the Action Area are the construction of the St. Herman's harbor drydock. Due to the small size of the harbor drydock footprint relative to the amount of marine habitat in the Action Area, it is unlikely that this project will change the magnitude of effects to federally listed species when considered in aggregate with effects of the Kodiak Airport expansion.

When considered in combination with past, present, and reasonably foreseeable state and private actions that have taken place or will take place in and adjacent to the Action Area, the cumulative impacts of this project may affect, but are not likely to adversely affect the Steller sea lion and its critical habitat as well as humpback whales. This conclusion is drawn because the habitat affected is not unique and the quantity of the affected habitat is small relative to the amount of similar marine habitat in the Action Area. Though these species may be displaced from the affected area, they are capable of accessing the abundant food resources in Chiniak Bay and surrounding areas and will not have to travel long distances or expend high amounts of energy to gain access to alternative foraging areas. There are no anticipated cumulative effects to fin whales due to their rarity in the Action Area.

6 DETERMINATION OF EFFECT

6.1 Steller Sea Lion

The proposed action **may affect, but is not likely to adversely affect** the Steller sea lion or its designated critical habitat for the following reasons:

- The project will fill 18.1 acres of potentially suitable foraging habitat within Steller sea lion critical habitat associated with the Long Island and Chiniak Point haulouts. Because marine habitat loss resulting from the proposed action represents less than 0.1% of critical habitat in the Action Area, effects to critical habitat would be minor.

- It will also result in a short-term decline in production of prey for the Steller sea lion. Research has shown that changes in the Steller sea lion prey base due to physical habitat alteration do not appear to be a significant factor in sea lion population declines (58 FR 45269). Thus, short-term declines in sea lion prey production in the Project Area are not expected to have a discernible effect on sea lion prey availability or sea lion foraging success within the larger Action Area.
- The affected area is not known to provide unique resources relative to the adjacent habitat.
- Observers will be on-site to stop noise-generating work if such work might disturb Steller sea lions.
- Boat and barge operations will follow USFWS's *Boat Operation Guidance to Avoid Disturbing Sea Otters* (USFWS 2012b) to minimize impacts to marine mammals.

6.2 Fin Whale

Implementation of the proposed action will have **no effect** on the fin whale for the following reasons:

- Fin whales are rarely observed in Chiniak Bay, the only known occurrences are in the deep water at the mouth of the bay, a distance that would buffer any potential effects from the project.

6.3 Humpback Whale

Implementation of the proposed action **may affect, but is not likely to adversely affect** the humpback whale for the following reasons:

- The project will directly fill humpback whale prey habitat and will likely lead to a short-term loss of prey productivity in the Project Area. Humpback whales in the Airport area are capable of accessing the abundant food resources in Chiniak Bay and will not have to travel long distances or expend high amounts of energy to gain access alternative forage.
- The impacts to food resources outside of the fill areas will be short term.
- The quantity of primary habitat components that are affected by the Kodiak Airport project is small relative to those available to humpback whales in the area.
- The affected area is not known to provide unique resources relative to the adjacent habitat.
- Observers will be on-site to stop noise-generating work if such work might disturb humpback whales.
- Boat and barge operations will follow USFWS's *Boat Operation Guidance to Avoid Disturbing Sea Otters* (USFWS 2012b) to minimize impacts to marine mammals.

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DRAFT
Biological Assessment of Listed Species under United States Fish and Wildlife Service Jurisdiction for the Kodiak Airport Runway Safety Area Improvement Project

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1 INTRODUCTION

The purpose of this biological assessment (BA) is to review the proposed Kodiak Airport (Airport) runway safety area improvements project in sufficient detail to determine to what extent the proposed action[1] may affect any federally listed and candidate species or their critical habitat. The species considered in this BA are summarized in Table 1. This BA has been prepared in accordance with legal requirements set forth under Section 7 of the Endangered Species Act (ESA) (16 U.S. Code [U.S.C.] 1536 [c]), and follows the guidelines for environmental analysis established in Federal Aviation Administration (FAA) Order 1050.1E change 1, *Environmental Impacts: Policies and Procedures*; FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*; and the accompanying FAA *Environmental Desk Reference for Airport Actions*.

Table 1. Species Considered in this Biological Assessment

Common Name	Federal Status	Designated Critical Habitat	Determination
Northern sea otter (*Enhydra lutris kenyoni*) Southwest Alaska Distinct Population Segment	Threatened	Yes	Not likely to adversely affect
Steller's eider (*Polysticta stelleri*) Alaska Breeding Population	Threatened	Yes, but critical habitat does not occur in Action Area	Not likely to adversely affect
Yellow-billed loon (*Gavia adamsii*)	Candidate	No	Not likely to adversely affect
Kittlitz's murrelet (*Brachyramphus brevirostris*)	Candidate	No	Not likely to adversely affect

The purpose of the projects proposed by the Alaska Department of Transportation and Public Facilities (ADOT&PF) is to bring the Airport runways into compliance with the FAA runway safety area (RSA) standards to the extent practicable. The FAA requires that public use airports have RSAs, which serve as buffers should aircraft deviate from the runway during an accident or emergency. The size standards of these RSAs are based on the types of aircraft served at each runway (FAA 2004). The runway system at the Airport consists of three runways, two of which (Runways 07/25 and 18/36) do not include the length of RSA necessary at the runway ends to provide adequate overrun or undershoot protection. The FAA is the lead federal agency for this project and is preparing an environmental impact statement (EIS) to evaluate the environmental consequences of enhancing RSAs on Runways 07/25 and 18/36 at the Airport. This BA describes the combination of the two proposed actions (one for each runway). The proposed actions will meet the project purpose and need (to provide RSA improvement and safety enhancement) while minimizing negative environmental impacts.

[1] The FAA has prepared a draft environmental impact statement for the proposed improvements to runway safety areas at Kodiak Airport. From among a range of possible improvement options, FAA has identified a preferred alternative for each runway. These are referred to as the proposed action in this BA.

The project involves improvements to RSAs at the Airport, located on the coast of Kodiak Island in Southwest Alaska. Because work will occur adjacent to and in marine waters, it has the potential to affect ESA-listed marine species and critical habitat that occur in the area. This BA, prepared by SWCA Environmental Consultants (SWCA) on behalf of the FAA, addresses the proposed action and species under management authority of the U.S. Fish and Wildlife Service (USFWS) in accordance with Section 7(c) of the ESA of 1973, as amended. A separate BA has been prepared and submitted to the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) addressing listed species under that agency's management authority (SWCA 2012).

2 DESCRIPTION OF THE PROPOSED ACTION

The runway system at the Airport consists of three runways: 07/25, 11/29, and 18/36. Runway 11/29 meets current FAA design standards, but Runways 07/25 and 18/36 do not have the length of RSA necessary at the runway ends to provide adequate overrun or undershoot protection. The ADOT&PF proposes to bring the Airport runways into compliance with FAA RSA design standards to the extent practicable.

In general, RSAs are rectangular areas that are centered on the runway, measure 500 feet wide along the length of the runway, and extend 1,000 feet beyond each runway end. In areas where standard size RSAs cannot feasibly be developed off the runway ends, engineered materials arresting systems (EMAS) can be installed. An EMAS consists of pre-cast, crushable, cellular cement blocks that slow or arrest the movement of aircraft that move beyond the end of a runway. EMAS allows for a smaller total area of RSA. The type of aircraft operating at a given airport determines airport-specific RSA design standard dimensions and the runway length needed for those aircraft. The RSA design standards for the Kodiak Runways 18/36 and 07/25 are based on the Boeing 737-400 design aircraft.

The existing RSA for Runway 07/25 on the west runway end is 500 feet wide and extends 1,000 feet in front of the landing threshold. However, there is no safety area in front of the Runway 07/25 landing threshold on the east runway end, a deficiency of 1,000 feet from design standards. The existing RSA for Runway 18/36 is 500 feet wide and contains no additional distance beyond the end of either runway (i.e., the RSA is deficient the full 1,000 feet on both runway ends).

This BA describes the combination of the two proposed actions (one for Runway 07/25 and one for Runway 18/36). The proposed actions will meet the project purpose and need (to provide RSA improvement and safety enhancement) while minimizing negative environmental impacts.

Construction of the RSAs will require approximately 719,000 cubic yards of fill, including gravel for the embankments, medium-size underlayer stone, large-size armor stone, crushed aggregate base course, and sub-base course (DOWL HKM 2009). The source of these materials has not been determined. The FAA cannot dictate to the ADOT&PF which material source must be used, nor can ADOT&PF stipulate a source in advance of a construction contract. Any new source of construction material developed as a result of the airport project, or expansion of a commercial source beyond its permitted limits, would be subject to environmental permitting under applicable state and federal laws and regulations. ADOT&PF would ensure that USFWS is consulted regarding any potential effects to listed species prior to development of a new materials source, or expansion of an existing source for the purpose of constructing runway safety areas at Kodiak Airport. Through its general contract provisions, ADOT&PF would require its contractor to:

1. Acquire any permits and licenses required to complete the RSA project that are not acquired by ADOT&PF and to abide by those permits and licenses.
2. Provide qualified professionals to collect data or perform studies necessary to acquire permits for the use of sites not previously permitted.
3. Contact all government agencies having possible or apparent permit authority over that area.
4. Obtain all required permits, clearances, and licenses from those agencies, including but are not limited to Alaska Pollutant Discharge Elimination System General Permit, State Historic Preservation Officer approval, Title 16 Material Site Reclamation, and Temporary Water Use Permits; Department of Environmental Conservation Section 401 Certification, Solid Waste Disposal Site and Construction Camp Permits; Department of Fish and Game Special Area Permits; U.S. Fish and Wildlife Service Threatened and Endangered Species clearance; U.S. Army Corps of Engineers Section 404/Section 10 Permits; city or local government development permits and flood hazard permits; and the permission of the property owner or lessee.

For the purposes of the EIS and this BA, it is assumed that gravel for the embankments will come from an on-island source and be delivered, by truck, to the site. The use of Kodiak-area fill sources will require hauling operations for 45 to 90 days, 10 hours a day (DOWL HKM 2009). Haul routes will be located along the Kodiak Island road system and on existing Airport access roads. Alternately, gravel may be barged to the work sites (as described in more detail below). Embankment materials will be placed by conventional end dump methods from the existing embankments.

Underlayer and armor stone will come from an off-island source and be barged to the construction area. Transportation of underlayer and armor stone will require 10 to 20 barge trips over the construction period. Armor rock will be placed into its final location with a crane or loader (DOWL HKM 2009). Currently, there are one or two large vessels and 10 to 20 small vessels traveling in and out of Kodiak via Chiniak Bay on a daily basis. If all fill materials (armor rock and gravel) are barged to the site and small barges are used for project construction, approximately 400 barge trips will be required. This will result in the addition of approximately one barge per day to current boat traffic in Chiniak Bay.

Construction will take place over the course of approximately three years and will be completed in 2015. Construction will be phased so that in-water work will not occur on more than one runway at a time. It is anticipated that improvements to Runway 07/25 will be initiated first, with improvements to Runway 18/36 to be implemented upon completion of work on Runway 07/25. Work will also be scheduled to minimize impacts to operations by large aircraft, such as Alaska Airlines’ 737s and the U.S. Coast Guard’s C-130s. For these aircraft, off-peak season is typically from November to March, and work during this time will have the fewest impacts on their operations (DOWL HKM 2009). Some construction activities, such as preparation of the finished surfaces (e.g., sub-base, crushed aggregates, and paving) will need to be completed during the summer, in coordination with the ADOT&PF, FAA, and the U.S. Coast Guard.

The proposed actions specific to runway ends are detailed in the following sections.

2.1 Runway 07/25 Action

The proposed action for Runway 07/25 will enhance the RSA at the east end of the runway through an extension into St. Paul Harbor (east of the Airport) and the use of EMAS. Fill will be placed off Runway end 25 to create a landmass 600 feet long by 500 feet wide. The Airport's existing runway length of 7,542 feet will be maintained. The Runway end 25 EMAS bed will be approximately 170 feet wide and 385 feet in length, installed on pavement with a minimum setback of 35 feet from the runway threshold. The site design will also include sufficient area around the perimeter of the EMAS bed footprint to allow emergency vehicle access.

The EMAS will provide a 70-knot stopping capability on Runway end 25 for the runway's design aircraft. The existing RSA will be enhanced for aircraft overruns on Runway end 25 (i.e., for takeoffs to the east), the primary operational flow of the Airport for departures, providing an equivalent level of safety for aircraft overruns as that offered by a traditional graded 1,000-foot RSA. The expanded landmass beyond Runway end 25 will also meet FAA standards for undershoots by providing 600 feet of RSA.

Approximately 256,932 cubic yards of fill will be required to construct the new landmass needed to support the EMAS. The potential environmental impacts related to the Runway 07/25 proposed action will be associated with the short-term construction impacts of building into marine waters, and the loss of marine habitat from the placement of this fill to construct a 600-foot landmass expansion on Runway end 25.

2.2 Runway 18/36 Action

The proposed action for Runway 18/36 will enhance the RSA at the north and south end of Runway 18/36 through a 600-foot-long by 500-foot-wide landmass extension at the south (beyond existing Runway end 36) and a shift in the runway location 240 feet to the south. An EMAS bed approximately 170 feet wide and 165 feet long will be placed beyond Runway end 18 (north), installed on existing pavement with a minimum setback of 35 feet from the runway threshold. The EMAS bed will provide a 40-knot stopping capability on Runway end 18 for the runway's design aircraft.

The existing runway length of 5,013 feet will not change, but the runway end thresholds will be shifted 240 feet south of their current locations. This action will provide 360 feet of undershoot protection for landings from the south to Runway end 36 and 240 feet of undershoot protection for landings from the north to Runway end 18. This action will also provide 40-knot stopping capability for overruns beyond Runway end 18 and will provide 360 feet of overrun protection for landings and takeoffs to the south.

Approximately 462,081 cubic yards of fill will be required to construct the new 600-foot landmass extension to the south beyond Runway end 36, shift the runway 240 feet, and install a 40-knot EMAS at the north end of the runway. The potential environmental impacts related to this action will be associated with the short-term consequences of fill placement into St. Paul Harbor and the long-term changes resulting from lost habitat and new landmass in the marine environment. This action avoids placing any fill north of the existing runway toward the Buskin River.

2.3 Best Management Practices and Conservation Measures

Implementation of the proposed project will include a variety of conservation measures and best management practices (BMPs). Final proposed conservation measures will be determined following agency input and analysis of cost and feasibility by FAA and ADOT&PF. Proposed conservation measures are expected to reduce or eliminate project-related impacts and avoid adverse effects to listed species and critical habitat. Where appropriate, conservation measures will be implemented using an adaptive management approach. BMPs will be used to minimize impacts to listed species during construction.

Conservation measures and BMPs for the Kodiak Airport project include the following:

- Wildlife observers will ensure listed and candidate species are protected by adhering to the USFWS's *Observer Protocols for Fill Placement and Dredging* in the marine environment (USFWS 2012a). The observer protocol will be re-evaluated following each construction season. No changes to the observer protocol will be made without review and approval by USFWS or NMFS, as applicable.
- Fill materials will be obtained from existing permitted sources (along the road system, if possible) and will be clean (i.e., will contain minimal fine particles such as silt and clay) to minimize sediment releases and turbidity outside of the fill zone.
- Fill materials will be free of invasive species.
- Armor rock will be evaluated by pH testing to ensure compatibility in the marine environment, thereby facilitating colonization of the outer fill material by marine species similar in quality and quantity to species using the existing armor rock in the Project Area.
- A construction stormwater pollution prevention plan (SWPPP) and a construction oil spill prevention and response plan will be prepared to avoid or minimize discharges of sediment or hydrocarbons during construction.
- Silt curtains will be the primary method of containment at both runway ends. If silt curtains are determined to not adequately contain fine sediments during fill activities, other techniques will be used to minimize sedimentation dispersion in the marine environment, such as using alternative fill placement methods or washing the fill. These alternative methods will be developed for and documented in the SWPPP. If methods included in the SWPPP are not successful, the SWPPP will be modified to identify alternative methods for sediment containment, and USFWS will be provided with an opportunity to review the revisions prior to implementation.
- Material barges will not be grounded in kelp stands.
- Project-related barge travel in the Action Area will avoid areas with high densities of ESA species to the extent practicable. Boat and barge operations will follow USFWS's *Boat Operation Guidance to Avoid Disturbing Sea Otters* (USFWS 2012b) to minimize impacts to marine mammals.
- Barges used for construction will follow standard BMPs for vessels to minimize the potential for oil or fuel spills (such as having an oil spill emergency plan). The only oil or fuel associated with barging of construction materials would be the fuel tanks used to operate the

tug that would guide the barge to the construction site. The barge would not carry fuel or oil tanks.

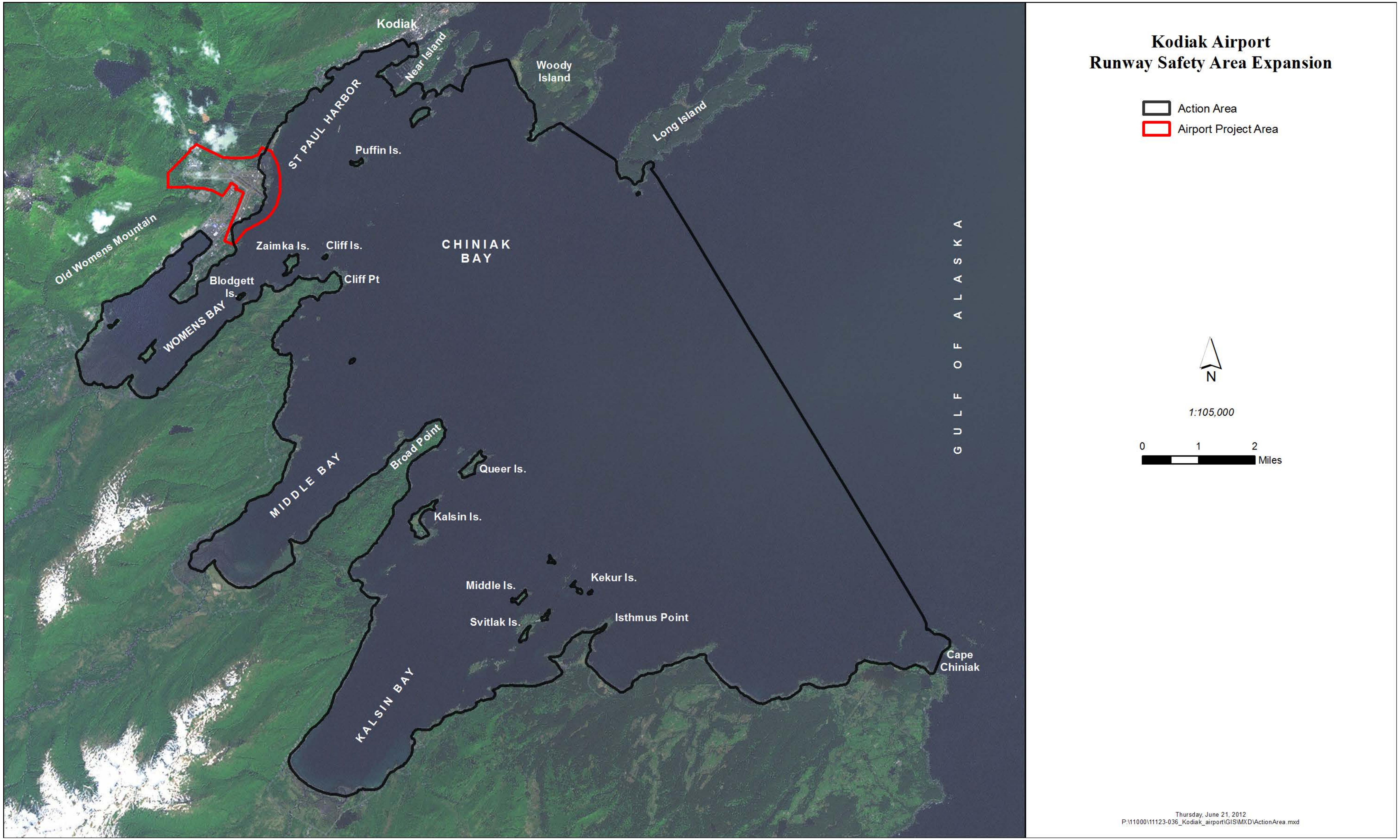
- Ballast water and hulls on armor rock transport barges will be free of invasive species.
- If ground lighting is needed for work areas within ½ mile of the coast:
  - lighting will be kept to the minimum level needed for safety and security;
  - lights with motion or infrared sensors and switches will be used to keep lights off when not needed;
  - lights will be hooded, down-shielded, and directed to minimize horizontal and skyward illumination; and
  - high-intensity lighting, steady-burning, or bright lights such as sodium vapor or spotlights will be avoided
- If used, lights will be flashing red. Steady lights will not be used to make cranes or other overhead structures more visible. Only strobe, strobe-like, or blinking incandescent lights will be used for this purpose.
- The wildlife observer will confirm that any cranes used in construction are lowered when not in use and are not lighted, or if remaining up at night, lit only with strobe lights.
- Timing of construction will be coordinated with USFWS, NMFS, and ADFG to minimize impacts to ESA species. Timing will consider USFWS's recommended time periods for avoiding vegetation clearing in Alaska in order to protect migratory birds (USFWS 2007a).

3 ACTION AREA

The Action Area consists of a 63,000-acre area comprising the proposed fill footprints adjacent to the Airport and the surrounding areas of Chiniak Bay and its sub-bays: St. Paul Harbor, Womens Bay, Middle Bay, and Kalsin Bay (Map 1). Chiniak Bay is contiguous with and thus physically, chemically, and biologically connected to the nearshore waters adjacent to the Airport where the RSAs will be constructed. Furthermore, construction of the RSAs will require barging underlayer rock and armor rock from off of the island. Given the potential for barge traffic to physically affect federally listed species, Chiniak Bay is considered an appropriate Action Area for this consultation. Data on federally listed and candidate species' use of the Action Area were obtained by conducting boat-based surveys of Chiniak Bay. Surveys were conducted in February, May, and September of 2008. These surveys were designed in coordination with Douglas Burn and Angie Doroff of the USFWS, and Angie Doroff participated in all three surveys. Detailed information on the design of these surveys is provided in the *Terrestrial Vegetation and Wildlife, and Marine Mammals and Seabirds Technical Report* (Technical Report; SWCA 2009).

The following sections discuss natural attributes of the habitats within and near RSA construction disturbance areas off of the existing runway ends. The Project Area consists of the Airport and the nearshore marine waters within and immediately adjacent to the fill footprints of each of the proposed RSA extensions (Map 2). The Project Area comprises the area within which federally listed species will be directly affected by construction disturbance or indirectly affected by long-term changes in habitat or water chemistry due to potential project-related changes in distribution of the Buskin River freshwater plume.

Data on federally listed and candidate species' use of the Project Area were obtained by conducting point-count surveys from the runway ends. Twenty surveys were conducted over the course of one year. A detailed description of survey methods is available in the Technical Report prepared for the EIS (SWCA 2009).



Map 1. Action Area.

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Map 2. Project Area.

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3.1 Runway End 18

A barrier bar and nearshore shoals are located at the mouth of the Buskin River and Runway end 18 (see Map 2). The barrier bar directs the river flow north to its mouth in Chiniak Bay, which is approximately 1,500 feet north of Runway end 18.

Both field survey data and NOAA ShoreZone data (NOAA 2012) were used to classify shoreline habitats in the Project Area. Although ShoreZone data are only available for the intertidal zone, ShoreZone mapping protocols provide definitions for supratidal and riparian areas (Harney et al. 2008). The supratidal and riparian area along the barrier bar near Runway end 18 is classified as a *beach storm ridge*, which refers to an area that receives occasional marine influence and is often vegetated with grasses and trees, suggesting it is relatively stable. The area further north near the Buskin River mouth is more indicative of a *beach berm*, which refers to an area that receives frequent marine influence, contains more mobile sediment, is unvegetated, and may be found in the intertidal zone. The plant community within the vegetated area along the barrier bar is composed primarily of an *Elymus* forb meadow.

The marine side of the Buskin River barrier bar north of Runway end 18 consists of a low-gradient beach that is predominately composed of sand with a secondary component of gravel. It is bounded on the south by armor rock at Runway ends 18 and 25. The high tide line is marked by decomposing kelp and algae that have drifted ashore. This microhabitat provides food and shelter for a variety of invertebrates, including species that juvenile salmonids may use as prey, such as amphipods, worms, and insects (Morley et al. 2012; Sobocinski et al. 2010). Lower down on the beach, cobbles and large gravels are strewn in a band over the sandy surface. Offshore there are some finer sediments. This area is exposed to the greatest amount of fresh water and silt from the Buskin River. The subtidal area continues from the intertidal beach as a flat sandy area, gently sloping toward the bay. Bottom substrates are mostly sand, and there are some small clumps of kelp that are likely attached to cobble (Map 3).

The intertidal area provides important habitat for various fish species. For example, juvenile salmonids use the nearshore areas near the mouth of the Buskin River during and after smolting, generally March through July. During June 2008 field surveys, juvenile chum (*Oncorhynchus keta*) and pink salmon (*O. gorbuscha*) were numerous in the sandy intertidal areas along the Buskin River barrier bar, especially along the middle and southern portions of the bar.

Habitat along the barrier bar is suitable for Pacific sand lance (*Ammodytes hexapterus*; Robards et al. 1999), flatfish (Holladay and Norcross 1995), smelt, and sculpins (Mecklenburg et al. 2002).

Sandy, nearshore habitats, like those at the base of Runway end 18, support various kinds of fish and invertebrates, including prey species for northern sea otters (*Enhydra lutris kenyoni*) and the waterbirds described in this BA (Steller's eider [*Polysticta stelleri*], yellow-billed loon [*Gavia adamsii*], and Kittlitz's murrelet [*Brachyramphus brevirostris*]).

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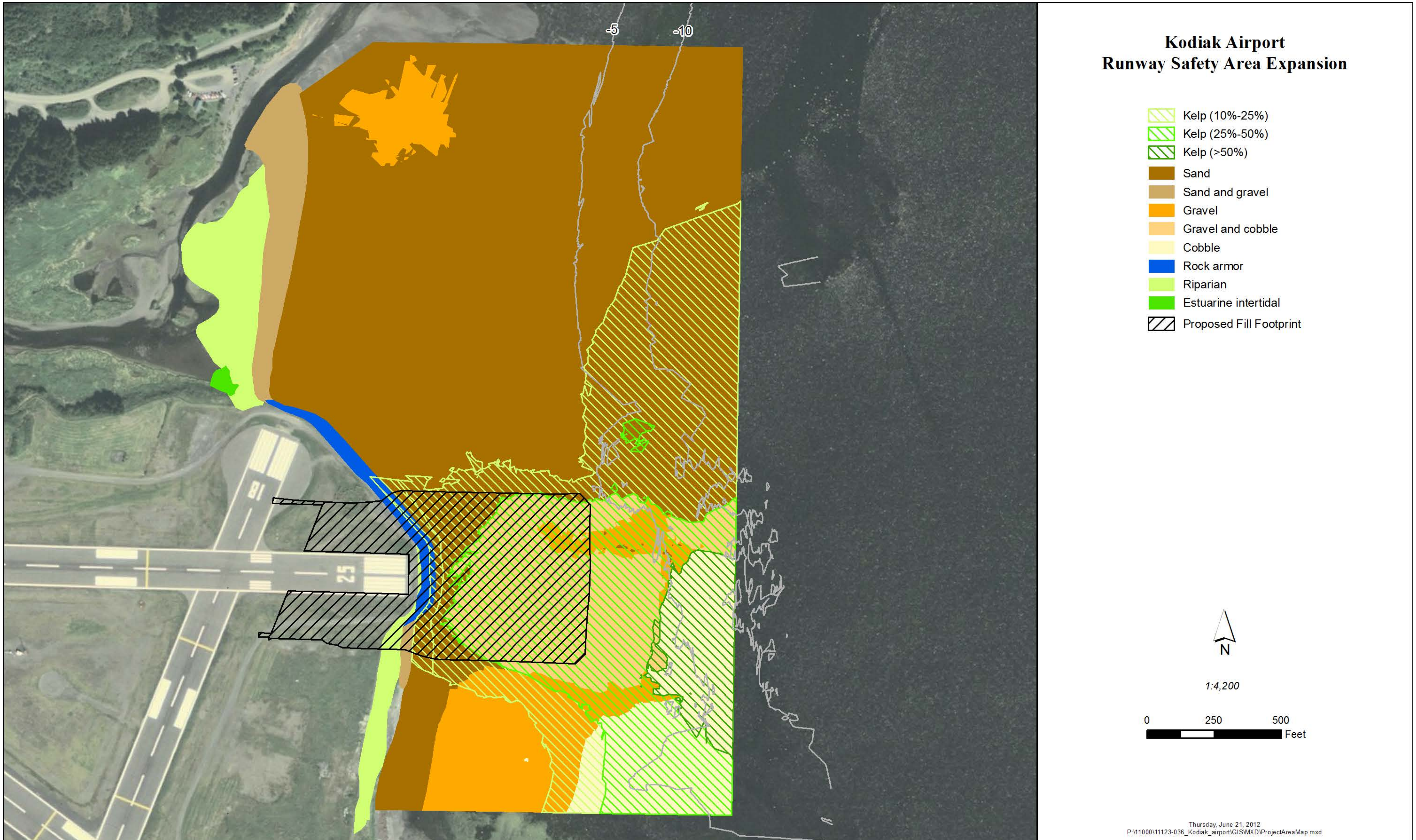

Map 3. Marine habitat off Runway ends 18 and 25.

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3.2 Runway End 25

An armor rock embankment extends below Runway end 25. The supratidal and riparian area at Runway end 25 is composed mostly of an armor rock embankment. The vegetation is composed of Elymus grassland, Elymus forb meadow, Sitka alder (*Alnus sinuata*), salmonberry (*Rubus spectabilis*), and elderberry (*Sambucus racemosa*).

At the base of the embankment is a narrow, sandy intertidal area with a gentle slope similar to the marine side of the Buskin River barrier bar. The shallow subtidal area contains substrates of cobble, large gravel, and shell debris (see Map 3).

Lower down on the beach, most of the largest cobbles are covered with barnacles and occasional clumps of rockweed (*Fucus gardneri*), indicating the bottom surface is stable and does not move with waves or currents. The inshore area is densely covered with algae, including kelp.

Of the runway ends surveyed, the area from Runway end 25 to Runway end 29 had the greatest diversity of substrates and density of aquatic vegetation. The substrate complexity may in part explain the wider diversity of algae and invertebrate species documented in this region compared to other parts of the Project Area. Algae provide increased habitat complexity for fish by offering food sources and places for cover. Some of the fish and invertebrate species that may use the area off Runway end 25 are prey species for sea otters and waterbirds.

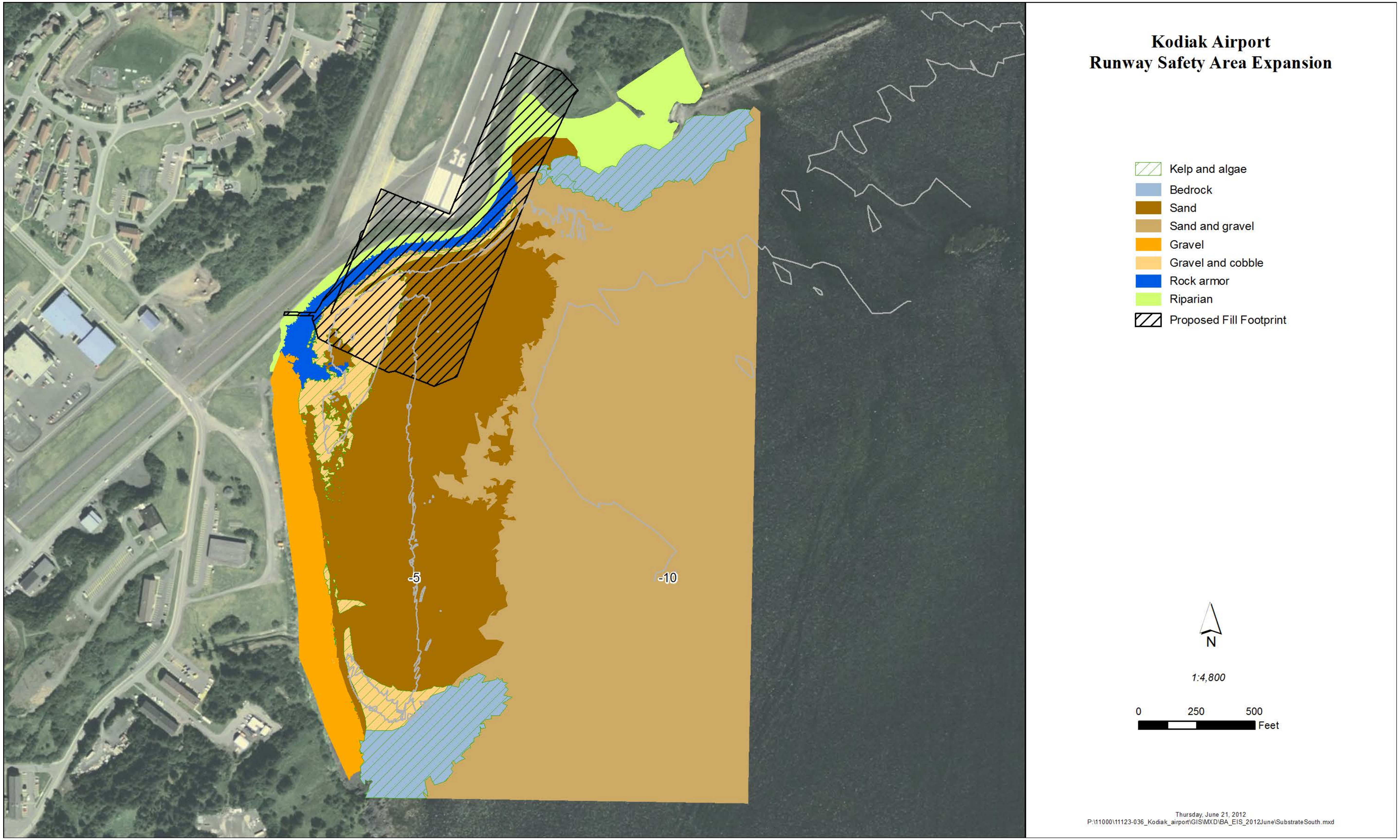
3.3 Runway End 36

Finny Beach is located near the base of Runway end 36 (see Map 2). The intertidal area on the north end of the beach within the Runway end 36 RSA footprint is extremely steep, and the substrate is composed of large slate boulders. In this area, armor rock extends from the base of the runway into the water. The upper beach in this area is covered with large gravels and chunks of concrete that have washed out of the bank above. The substrate transitions from the large armor rock boulders to gravel, then from sand to fine gravel as the beach progresses to the south. Although the main beach is relatively well-protected, there is little evidence of algae beyond the armor rock slope, indicating that substrates at the beach are mobile. At the furthest southern point of the beach, a rocky intertidal point extends out into the bay. The rocks are covered with dense areas of rockweed and patches of barnacles and Pacific blue mussels (*Mytilus trossulus*).

The subtidal area south of Runway end 36 is mostly sand, with isolated areas of algae-covered (mostly with rockweed) cobbles or bedrock (Map 4). Large drifts of algae were observed in this area during the 2008 surveys (SWCA 2009).

The intertidal area within the proposed fill footprint for this action is mostly armor rock. The intertidal area near outside the proposed fill footprint is mostly gravels and sand and is suitable for Pacific sand lance (Robards et al. 1999), flatfish, smelt, and sculpins (Mecklenburg et al. 2002).

The nearshore subtidal habitat off Runway end 36 is composed mostly of sand and gravel and supports various kinds of fish and invertebrates, including species that are preyed upon by the federally listed threatened and candidate bird species discussed in this BA.



Map 4. Marine habitat off Runway end 36.

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4 SPECIES/CRITICAL HABITAT CONSIDERED

4.1 Species

The species considered in this BA (see Table 1) were identified in a letter to R. Spencer Martin (Principal Ecologist, SWCA) by Ellen W. Lance (Endangered Species Biologist, USFWS) as part of the *Threatened and Endangered Species List for Kodiak Airport Improvements (consultation number 2009-0100)* dated April 28, 2009.

4.2 Critical Habitat

The Action Area in this BA falls within designated critical habitat for the northern sea otter (Unit 5 Kodiak, Kamishak, Alaska Peninsula). The final designation published on October 8, 2009 (74 *Federal Register* [FR] 51988–52012) designated critical habitat as waters within the 65.6-foot depth contour, the 328.1-foot nearshore zone, or both (where these two areas overlap). These waters cover approximately 5,879 square miles in southwestern Alaska, including a substantial portion of Chiniak Bay (Map 5). Under this rule, all of St. Paul Harbor, Womens Bay, and Middle Bay as well as the Kalsin Island–Queer Island–Broad Point area is designated as northern sea otter critical habitat. The final rule excludes from critical habitat all developed areas, such as piers, docks, harbors, marinas, jetties, breakwaters, and other areas that lack primary constituent elements (PCEs). PCEs for the Southwest Alaska Distinct Population Segment (DPS) of the northern sea otter consist of (1) shallow rocky areas less than 6.6 feet deep where marine predators are less likely to forage; (2) nearshore waters within 328.1 feet of the mean high tide line; (3) kelp forests in water depths less than 65.6 feet that provide protection from marine predators; and (4) prey resources in the areas identified by PCEs 1–3 that are present in sufficient quantity and quality to meet the energetic requirements of the species. Nearshore waters in the vicinity of the Airport appear to contain all of these PCEs.

4.3 Consultation to Date

Members of the Kodiak EIS consulting team have met with USFWS personnel several times since 2006. Details of these meetings are summarized in Table 2.

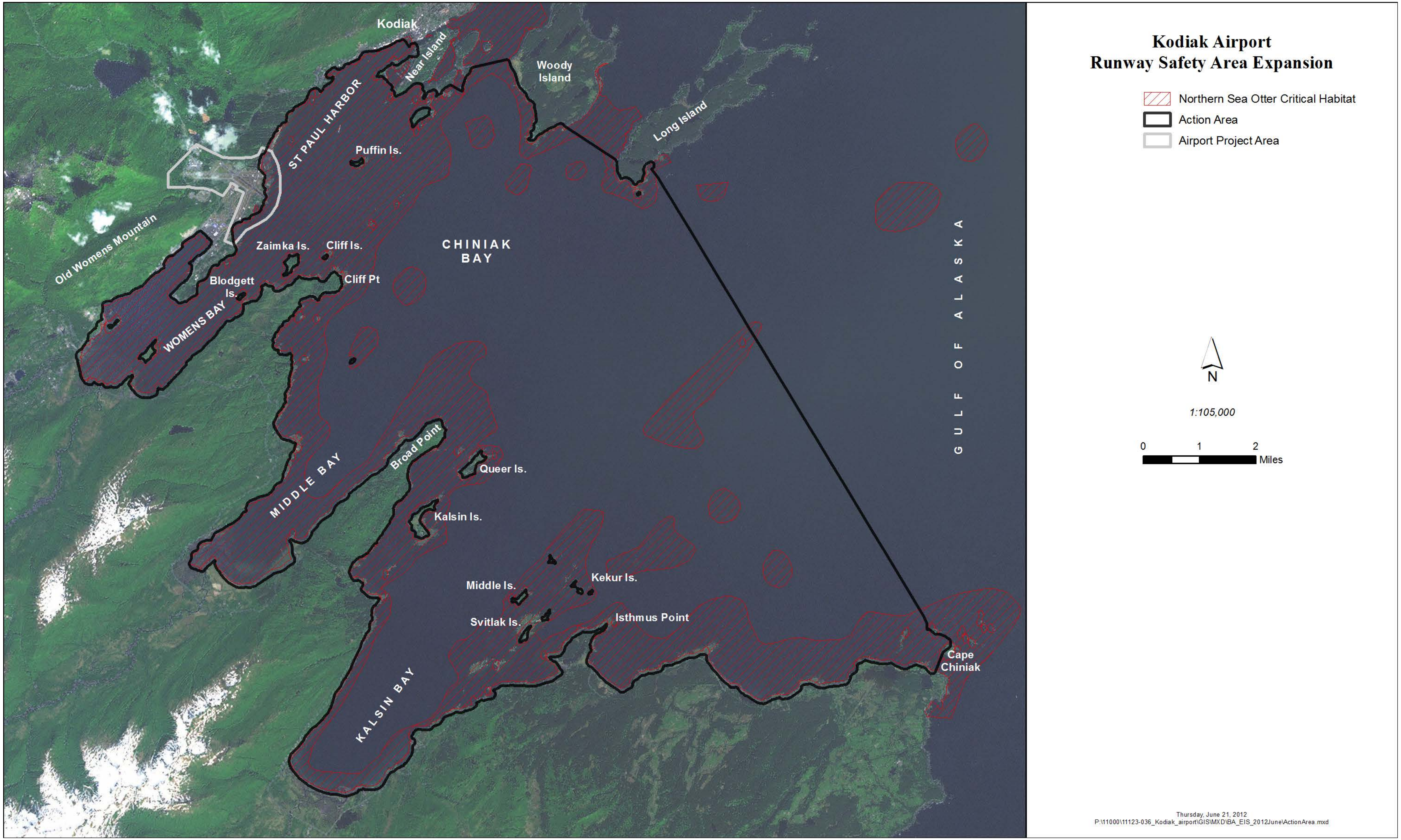
Table 2. Kodiak Airport Meetings Involving the USFWS

Date	Location	Meeting Summary
Dec. 12, 2006	Anchorage	EIS team met with agencies to introduce Kodiak Airport RSA improvements project and solicit early input on project issues
Jun. 28,2007	Anchorage	Met with the USFWS to discuss suitable methodologies for conducting otter surveys in Chiniak Bay
Sep. 24, 2007	Anchorage	Met with the USFWS to review the EIS consulting team's draft northern sea otter recovery permit application and discuss proposed methodology for conducting boat-based surveys for otters and seabirds in the Action Area
Jan. 29, 2008	Anchorage	Met with the USFWS to review and revise proposed northern sea otter survey design

Table 2. Kodiak Airport Meetings Involving the USFWS

Date	Location	Meeting Summary
Jul. 8, 2008	Anchorage	Updated agencies on alternatives development and survey methodologies
Dec. 8, 2008	Anchorage	Met with agencies to review project purpose and need and to discuss mitigation and threatened and endangered species consultation
Feb. 25, 2009	Kodiak	Met with agencies and provided an update on the draft environmental consequences analysis
Mar. 30, 2009	Anchorage	Updated the USFWS on survey results for northern sea otter and Steller's eider and presented initial impact determinations for the RSA alternatives
Dec. 1, 2009	Anchorage	Met with USFWS to discuss preliminary draft EIS (PDEIS) impacts analysis concerning listed and candidate species, the biological assessments, conclusions, and potential conservation measures
Jun. 23, 2010	Anchorage	Met with USFWS concerning comments to PDEIS regarding habitat, impacts analysis, scope of work, range of alternatives, hydrologic modeling and other issues
Feb. 15 & 16, 2011	Anchorage and Kodiak	Met with agencies concerning revised alternatives analysis, screening for feasibility and address questions
Nov. 2 & 3, 2011	Anchorage and Kodiak	Met with agencies concerning range of alternatives to be included in draft EIS
May 2, 2012	Anchorage	EIS team met with USFWS to discuss draft EIS and project effects

There have also been e-mail exchanges between Spencer Martin, SWCA, and Douglas Burn, USFWS, during the design of the boat-based sea otter surveys of Chiniak Bay. On June 29, 2007, Doug Burn sent an e-mail to Spencer Martin and other members of the EIS consulting team that included two scientific papers outlining methodologies for conducting otter surveys. On February 5, 2008, Spencer Martin sent an e-mail to Doug Burn and Angie Doroff containing additional details on the proposed survey methodology, a map showing the survey strata and transects, and a request for USFWS approval and input on the final survey design. Doug Burn responded on February 5, 2008, with approval of the transect map and input on sampling intensity. In addition, Ken Wallace of the EIS team sent Doug Burn an e-mail regarding sampling intensity on February 6, 2008. Doug Burn responded on February 6, 2008, and Doug Burn provided Susan Martin, SWCA, with information on northern sea otter data analysis methodology and critical habitat information in e-mails sent on January 23 and May 11, 2009, respectively. Angie Doroff participated in the sea otter surveys with the EIS consultant staff.



Map 5. Northern sea otter designated critical habitat.

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4.4 Species Descriptions and Distribution

4.4.1 Northern Sea Otter

The northern sea otter occurs in coastal waters off of northern Japan and the east coast of Russia, north to the Pribilofs and south through the Aleutians, southern Alaska, British Columbia, and Washington State (Nowak 2003). There are several subspecies of northern sea otter; the subspecies that occurs in the Kodiak area, *Enhydra lutris kenyoni*, is distributed from the Near Islands east and south to British Columbia and Washington. *E. l. kenyoni* is separated from the other subspecies of northern sea otter, *E. l. lutris,* by an open water expanse of approximately 200 miles between the Near Islands of the United States and the Commander Islands of Russia. This subspecies is separated from the southern sea otter, *E. l. nereis,* on the California coast by approximately 600 miles. Three DPSs of *E. l. kenyoni* have been identified in Alaska. The Southwest Alaska DPS of the northern sea otter (*E. l. kenyoni*) was listed as threatened under the ESA in 2005 (50 Code of Federal Regulations [CFR] Part 17) and includes otters in the Aleutian Islands, the Alaska Peninsula, Bristol Bay, and Kodiak Island.

The final rule to list the northern sea otter DPS as threatened was published on August 9, 2005 (70 FR 46366). Sea otters generally occur in shallow-water areas near the shoreline. They forage primarily in nearshore waters less than 328 feet deep, and the majority of all foraging dives take place in waters less than 98 feet deep (Bodkin et al. 2004). Because water depth is generally correlated with distance to shore, sea otters typically inhabit waters within 0.62 to 1.24 miles of shore (Riedman and Estes 1990). Sea otters can also be found at greater distances from shore, typically in areas of, or near, shallow water. Northern sea otters are primarily associated with rocky marine habitats, and although they may occur further seaward, they tend to congregate between the shoreline and the outer limit of the kelp canopy, where present (Riedman and Estes 1990). Sea otters also inhabit marine environments with soft sediment substrates more typical of the Kodiak Archipelago, including Chiniak Bay. In rocky substrate habitats, primary prey includes sea urchins, octopus, and mussels. In soft-substrate habitats, clams tend to be the principal prey. Given the lack of urchins observed during dive surveys in the Project Area (SWCA 2009), clams and mussels are likely the primary source of food for sea otters in this area.

Sea otters are considered a keystone species because they have a strong influence on the composition of species and diversity of the nearshore marine environment in which they occur (Estes et al. 1978). For example, studies of subtidal communities in Alaska have demonstrated that when sea otters are abundant, herbivores, such as sea urchins, are kept at low densities due to otter predation, and kelp, which is consumed by sea urchins, tends to flourish. Areas containing kelp have complex habitat structure that promotes biological diversity. Conversely, when otters are absent, grazing by abundant sea urchin populations creates areas of low kelp abundance (Estes and Harrold 1988), which simplifies habitat structure and reduces diversity.

Threats to northern sea otters and their habitat include catastrophic oil spills, increased predation by killer whales, inadequate regulatory protection, and future disease epidemics (USFWS 2005). As of 2004, the estimated population of the Southwest Alaska stock of northern sea otters in the Kodiak Archipelago was 11,005 (Doroff et al. [in prep.] cited in USFWS 2008). Although the sea otter population trend in the Kodiak Archipelago does not appear to have experienced a significant decline in the past 20 years, other portions of the Southwest Alaska stock have experienced substantial declines, and the overall sea otter population in Southwest Alaska has declined by more than 50% since the mid-1980s (USFWS 2008). Thus, the overall population trend for this stock is considered to be declining.

4.4.2 Steller's Eider

The Steller's eider is a federally listed threatened species. It is also considered an Alaska Department of Fish and Game (ADF&G) species of special concern and is on the Audubon Alaska WatchList and the Audubon Nationwide WatchList. Alaska's breeding population of Steller's eider was listed as threatened in 1997 (62 FR 31748). Critical habitat for the breeding population was designated in 2001 and is located in the Bering Sea and Yukon–Kuskokwim Delta (66 FR 8849). The *Steller's Eider Recovery Plan* was published in 2002 (USFWS 2002) and documents threats and actions needed for recovery.

Of the four eider species found in Alaska, Steller's eider is the smallest. It is a diving duck, feeding mostly in marine habitats in the winter and freshwater ponds during the summer breeding season (ADF&G 2012). The Steller's eider diet consists of small marine invertebrates, mollusks, crustaceans, echinoderms, and small fish. It spends most of its life on the water, with a brief nesting period in tundra ponds of the arctic coastal plain in northeastern Siberian and northern Alaska.

There are three breeding populations of this species globally: two are located in Russia (Atlantic and Pacific) and one in Alaska. The Alaskan breeding population nests on the Arctic Coastal Plain near Barrow and Prudhoe Bay and on the Yukon–Kuskokwim River Delta in western Alaska (USFWS 2002). After breeding, from July through October, Steller's eiders concentrate in large numbers in marine waters near the Alaska Peninsula to undergo a complete molting. Afterward, they disperse to wintering grounds along the Aleutian Islands, the Alaska Peninsula, Kodiak Island, and southern Cook Inlet. In the winter, Steller's eiders remain in marine habitats usually less than 32.8 feet deep and less than 1,213.3 feet from shore (USFWS 2002). USFWS estimates that 0.8% of the Steller's eiders that winter in Alaska are individuals from the threatened Alaska breeding population (USFWS 2011). The remaining 99.2% are presumably from the larger Russian Pacific breeding population. Because less than 1% of the island's wintering eiders are thought to be from the Alaska breeding population, the action area does not represent important winter habitat for federally listed eiders. Wintering Steller's eiders can be found in large numbers in various parts of the island, including Chiniak Bay.

In the final rule for listing the Alaska breeding population of Steller's eider as threatened (62 FR 31748), the potential causes of decline included predation, hunting, ingestion of spent lead shot in wetlands, and changes in the marine environment that could affect species or other resources necessary for the survival of the Steller's eider population. Potential threats in the marine environment include risk of collisions with boats or lighted structures, exposure to contaminants, and changes in the quality or quantity of food sources. Exposure to oil or other contaminants near fish processing facilities in Southwest Alaska may also be a cause of population decline. The causes of decline and obstacles to recovery remain poorly understood (USFWS 2002).

4.4.3 Yellow-billed Loon

The yellow-billed loon was federally listed as a candidate species under the ESA on March 25, 2009 (74 FR 12932). A conservation agreement was published for this species in 2006 (USFWS 2006a) and documents conservation concerns and conservation strategies and actions. The yellow-billed loon is also on the Audubon Alaska WatchList and the Audubon Nationwide WatchList.

Of the five loon species found in Alaska, the yellow-billed loon is the largest. It is a surface diver, feeding mostly in marine habitats in the winter and freshwater inland or coastal lakes during breeding season (NatureServe 2008). The yellow-billed loon’s diet consists mainly of fish and occasionally aquatic invertebrates.

In Alaska, the breeding range of the yellow-billed loon extends throughout the subarctic and arctic tundra of northern Alaska. Yellow-billed loons nest exclusively in coastal and inland, low-lying tundra areas associated with permanent, fish-bearing lakes from 62° to 74° N (USFWS 2006a). The productivity of this species is variable due partly to nesting phenology that is restricted by short, open-water seasons on the northern breeding grounds. During the winter, this species is distributed in nearshore marine waters from Kodiak Island to Prince William Sound and throughout southeast Alaska and British Columbia (NatureServe 2008). Marine habitats in Alaska are important for migrating, wintering, and nonbreeding yellow-billed loons, which may spend approximately eight months each year exclusively in the marine environment (USFWS 2006a).

Conservation concerns for this species include habitat loss and degradation for both breeding and wintering habitats, fisheries bycatch, subsistence harvest, and disease (USFWS 2006a). Potential threats in the marine environment include risk of collisions with boats or lighted structures, exposure to contaminants, and changes in the quality or quantity of food sources. Exposure to oil or other contaminants near fish processing facilities in Southwest Alaska may also be a conservation concern.

4.4.4 Kittlitz’s Murrelet

The Kittlitz’s murrelet was federally listed as a candidate species under the ESA on March 25, 2004 (69 FR 24876). This species is also on the Audubon Alaska WatchList and the Audubon Nationwide WatchList.

The Kittlitz’s murrelet is a small and elusive diving bird with a diet primarily made up of fish. Recorded summer prey species consist of postlarval capelin (*Mallotus villosus*), Pacific sand lance, Pacific herring (*Clupea pallasii*), Pacific sandfish (*Trichodon trichodon*), and juvenile pollock (*Theragra chalcogramma*) as well as euphausiids, gammarid amphipods, and shrimp zoeae (Day et al. 1999). The Kittlitz’s murrelet lives year-round in coastal Alaska and the Russian Far East. It is also known to winter in Canada’s Northwest Territories. The majority of its breeding habitat occurs in Alaska (USFWS 2007b). Nesting habitat is thought to include unvegetated scree fields, coastal cliffs, barren ground, and rock ledges in remote areas. Nesting and foraging habitat is located close to marine waters, often near tidewater glaciers. When nesting, this species forages in nearshore marine waters (Stenhouse et al. 2008). The species is thought to move offshore into less sheltered waters for the winter.

Oil spills and gillnet fisheries are known to cause direct mortality to this species. Other factors suspected of having negative effects on Kittlitz's murrelet populations include glacial retreat, cyclical changes in the oceanic environment, chronic oil pollution, disturbance by commercial and recreational boaters, and cruise ships (USFWS 2006b).

4.5 Species Status in the Action Area

4.5.1 Northern Sea Otter

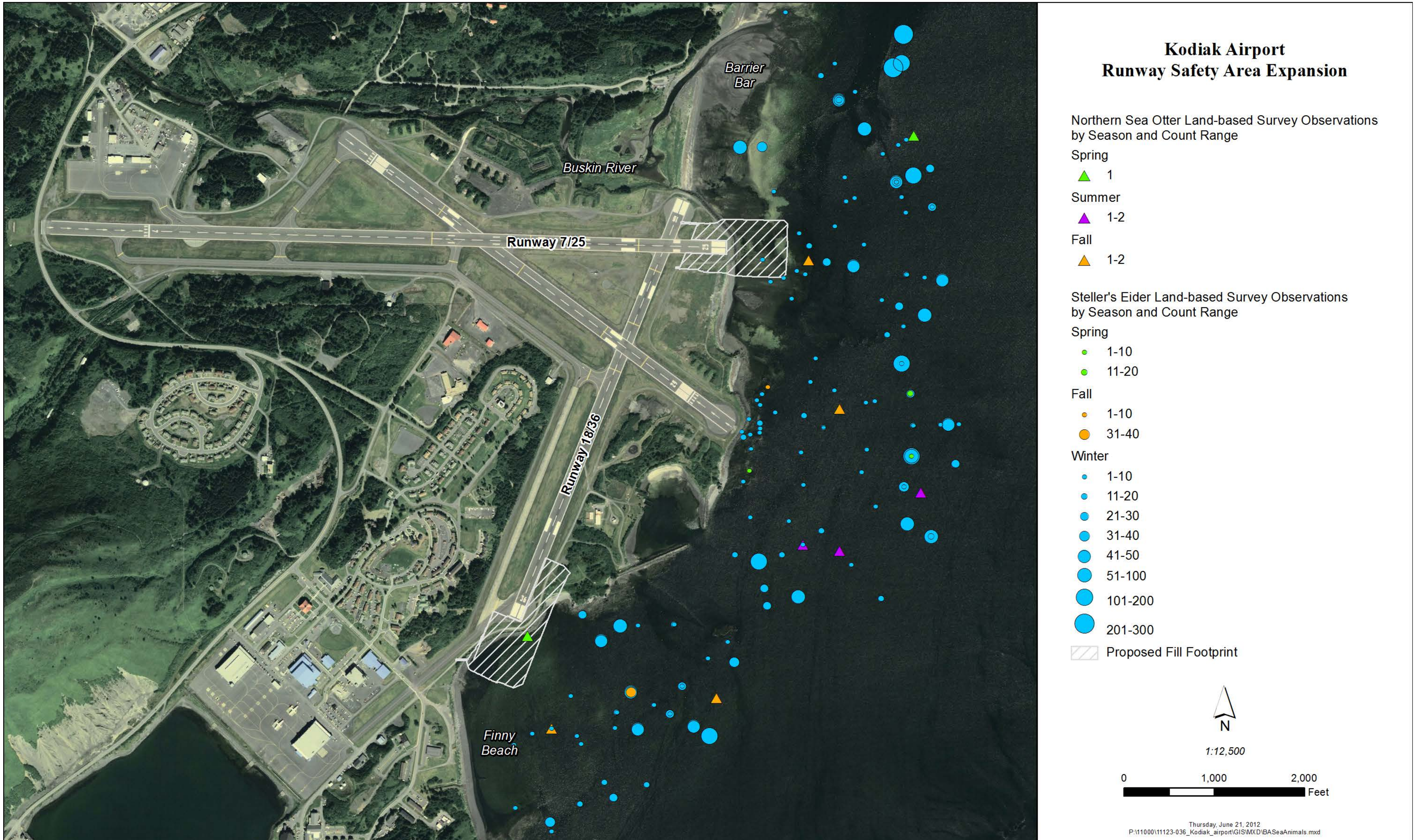
Sea otters are quite common in Chiniak Bay year-round, and one or two individuals were regularly observed off the shore of the Airport during shore-based bird and marine mammal surveys (Map 6) conducted for the Airport EIS. Otters were observed in the Action Area in all four seasons and off each of the runway ends. Three boat-based sea otter surveys of Chiniak Bay were conducted as part of the Airport EIS field survey effort, and in total, 291 otters were observed during the boat-based survey effort. The largest groups observed at a given time comprised 14 to 25 individuals. These groups were located in the Cliff Island–Cliff Point to Discover Rocks area, approximately 1 to 2 miles southeast and east of the Airport and in the Kalsin Island–Queer Island–Broad Point area and the Middle Bay area, both approximately 6 miles southeast and south of the Airport, respectively. Smaller groups of otters were found throughout the boat-based survey area (Map 7). Additional information on these surveys is available in the Technical Report (SWCA 2009).

4.5.2 Steller's Eider

Counts of wintering Steller's eiders were conducted by the USFWS and Kodiak National Wildlife Refuge in late January 1994, 2001, and 2002. These counts, each conducted with fixed-wing aircraft on a single day, produced the following Chiniak Bay Steller's eider totals, respectively: 2,024; 823; and 1,318 (Larned and Zwiefelhofer 2001, 2002). In 2001, a concentration of 30 birds was observed in the area offshore of the Airport (Larned and Zwiefelhofer 2001). In 2002, a concentration of 450 birds was observed offshore of the Airport and in the eastern portion of Womens Bay (Larned and Zwiefelhofer 2002). During SWCA's Airport coastal bird counts, which were conducted from November 2007 to October 2008, the largest number of individual Steller's eiders observed in a single day (combined results for each of the coastal points) was 1,075 on January 18, 2008. Counts were completed from non-overlapping point-count stations located at the four runway ends bordering nearshore waters (Runway ends 18, 25, 29, and 36).

Overall, the Airport point-count surveys resulted in a combined total of 3,876 Steller's eider observations. Approximately 90 of these observations were made in the fall. Except for a few individuals observed during the spring, the vast majority of the Steller's eiders detected during the Airport point counts were observed during the winter, and the majority of these individuals were observed at distances greater than 1,200 feet from the current runway ends. The Steller's eiders observations made during the point-count surveys were evenly distributed along the Airport coastline (see Map 6).

Boat-based surveys of Chiniak Bay resulted in 1,491 Steller's eider observations; 1,372 of these occurred in February 2008, whereas the remaining 119 observations were made in September 2008



Map 6. Northern sea otter and Steller's eider land-based observations in the Project Area.

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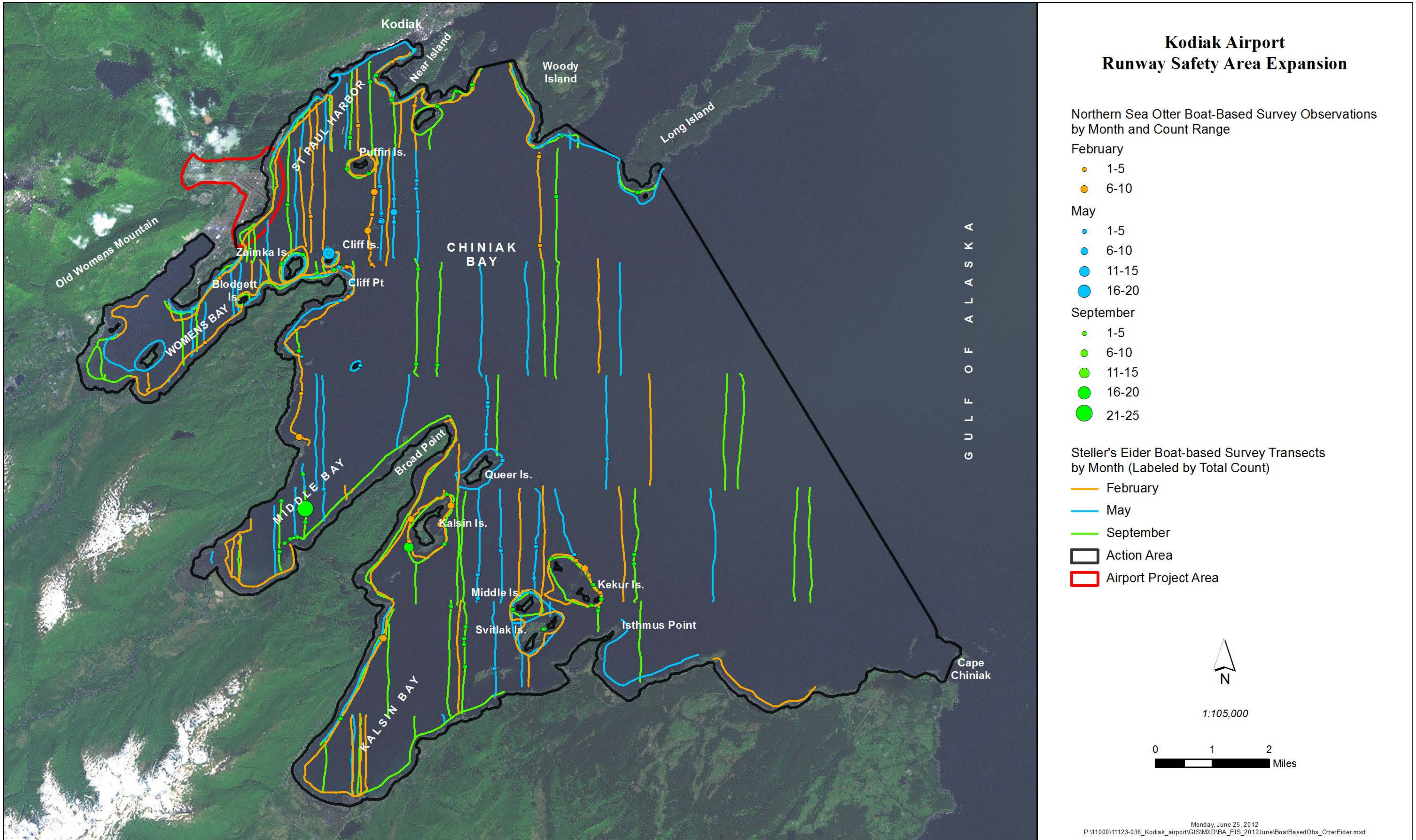

Map 7. Northern sea otter and Steller's eider observations and transects sampled during boat-based surveys of the Action Area.

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(see Map 7). No Steller's eiders were observed during the May 2008 surveys. Nearly 200 Steller's eiders were observed in nearshore waters from St. Paul Harbor to the southern end of the Nyman Peninsula during the February boat-based survey; 85 of these observations were from waters immediately offshore of the Airport. Other areas in which Steller's eiders were concentrated during the February boat survey included nearshore waters along southeastern side of Womens Bay and the Blodgett Island–Zaimka Island area, 1 to 2 miles southeast of the Airport. Over 660 individuals were observed in this area at that time. Another area of concentration was the Svitlak–Middle–Kekur Island–Isthmus Point area near the mouth of Kalsin Bay. Approximately 280 Steller's eiders were observed in this area during the February survey. These observations correspond with the winter waterfowl concentration zone map prepared by Kodiak Island Borough in 1997, which covers approximately 33,460 acres of Chiniak Bay (Map 8).

Table 3 in the Technical Report summarizes the results of the Airport point-count survey results for Steller's eider observed from the four coastal point-count stations (SWCA 2009). Fewer Steller's eiders were observed in the 400 feet–800 feet and 800 feet–1,200 feet distance categories, areas that will be directly affected by the proposed actions.

Data from the boat-based surveys were used to estimate Steller's eider densities in the nearshore waters around the Airport as well as in the pelagic waters of Chiniak Bay. The density of Steller's eiders observed in the nearshore waters in February 2008 and September 2008 was significantly greater than the density observed in the pelagic waters of Chiniak Bay. Additional information on these surveys is available in the Technical Report (SWCA 2009).

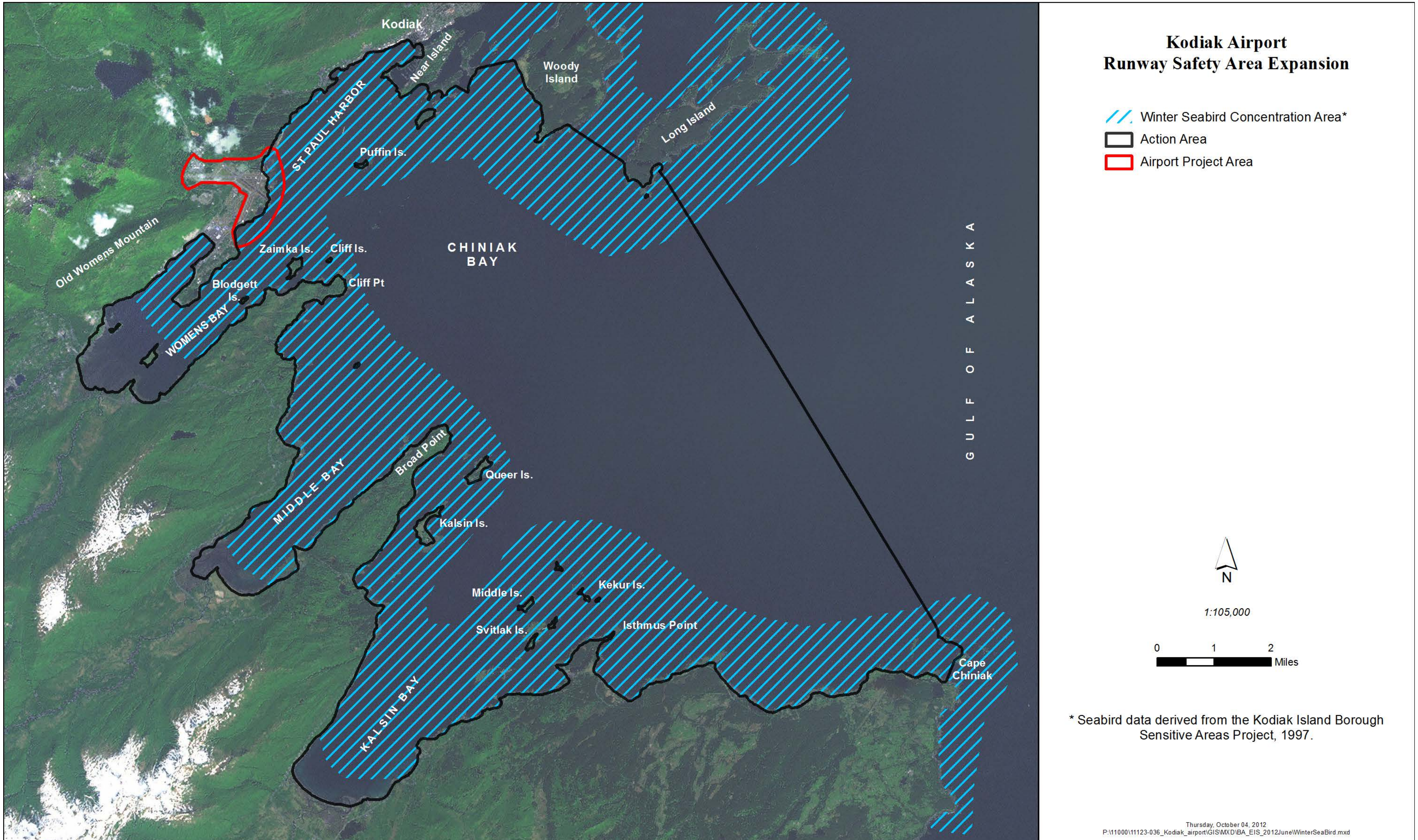
4.5.3 Yellow-billed Loon

Winter population distribution and numbers of yellow-billed loons are not well documented; however, some information is available from marine bird surveys. During boat-based marine bird population surveys conducted in Lower Cook Inlet, Prince William Sound, and Kodiak Island, Earnst recorded estimates of yellow-billed loons in tens to low hundreds (Earnst 2004). Yellow-billed loons are known to winter regularly, but in small numbers, in nearshore marine waters from Kodiak Island through Prince William Sound, and throughout Southeast Alaska and British Columbia (Earnst 2004).

During coastal bird counts conducted on the Airport from November 2007 to October 2008 for the Airport EIS, no yellow-billed loons were observed in the Action Area. In addition, no yellow-billed loons were recorded in the Action Area during the boat-based surveys conducted in 2008. The U.S. Geological Survey checklist of birds for Kodiak National Wildlife Refuge and Kodiak Archipelago lists the yellow-billed loon as rare in the spring, fall, and winter and casual or accidental in the summer (MacIntosh 1998). MacIntosh's checklist of birds from the Airport area, which is based on 35 years of observations from the mouth of the Buskin River and nearby areas, includes 19 records of yellow-billed loon in the Action Area. Five of these sightings were between 1972 and 1992; the other 14 sightings took place between 2000 and 2009 (personal communication between Spencer Martin, SWCA and Richard MacIntosh, 2009).

4.5.4 Kittlitz's Murrelet

During the breeding season, the largest counts and most frequent records of Kittlitz's murrelets have been from the waters around Woody and Long islands in northern Chiniak Bay. Hatch-year juveniles have also been recorded in this area, indicating that this species breeds in the vicinity (Stenhouse et al. 2008). In 2006 a single Kittlitz's murrelet nest was found in a high-elevation interior location on Kodiak Island, confirming that this species breeds on the island (Stenhouse et al. 2008). During the nonbreeding season, Kittlitz's murrelets have been observed in the upper reaches of Kodiak Island's fjords. Similar to the breeding season, the largest numbers from the east side of the island have been recorded around Chiniak Bay's northern islands (Stenhouse et al. 2008). An analysis of known breeding sites was done and extrapolated to the Kodiak Archipelago (Stenhouse et al. 2008). It identified potentially suitable breeding habitat west of Chiniak Bay along the mountainous spine of the Archipelago, outside of the Action Area (Stenhouse et al. 2008). No Kittlitz's murrelets were observed during the Airport wildlife hazard assessment or EIS field surveys (SWCA 2009; USDA 2000).



Map 8. Winter seabird concentration area.

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5 EFFECTS ANALYSIS

5.1 Northern Sea Otter

Because sea otters use kelp habitat, comparing the observed locations of otters in relation to the location of kelp habitat is important when describing effects of the proposed action on sea otters. Four northern sea otters were observed during the Airport point-count surveys in nearshore waters off Runway end 25. All of these individuals were outside of the proposed RSA expansion area, with three individuals observed greater than 1,200 feet from the runway end and the fourth observed between 800 and 1,200 feet from the runway end. No otters were observed in this area during the boat-based surveys..

Because kelp beds often have higher prey densities than surrounding habitats and because they provide hiding and escape cover from predators, they typically provide high-quality habitat for otters. Low (10%–25% cover) and medium (25%–50% cover) density kelp beds will be lost as part of the proposed action (see Maps 3 and 4). Some of these are canopy-forming kelps (such as *Alaria marginata*) and some are understory kelps (such as *Fucus gardneri*). High-density (greater than 50% cover) kelp occurs outside the RSA expansion area greater than 800 feet off the end of Runway 25. Although the extent of kelp mapping is limited, otters observed off this runway end and Runway end 29 may have been foraging in these higher-density stands. Potentially suitable otter foraging habitat with low and medium kelp cover off Runway end 25 will be lost under the proposed action, causing a direct impact to critical habitat. The high-density kelp stands surrounding the proposed action footprints will not be affected and will continue to provide suitable habitat for this species, and thus, the impacts to otters associated with this habitat loss will be negligible.

A single otter was observed off Runway end 18 during the Airport point-count surveys, and this individual was over 1,200 feet from the runway end. Thirteen otter observations were made from Runway end 36, five of which were at distances less than 600 feet from the current runway end and thus in the area of impact for the proposed action. No otters were observed in these areas during the boat-based surveys. The proposed action will result in the loss of otter foraging habitat in nearshore waters off Runway end 36, which will have direct effects on the northern sea otter foraging areas and critical habitat.

The proposed action will result in the net removal of 19.4 acres (<0.1% of potentially suitable foraging habitat in the Action Area) of nearshore waters and rocky shore habitat within the footprint of the proposed action (Table 3). This includes the loss of approximately 11.8 acres of low-density and medium-density kelp beds at the end of Runway 25. As indicated above, the loss of this habitat will have direct effects on the quantity and quality of otter food resources in this area. Although potentially suitable habitat does exist in the kelp beds off the end of Runway 25, only one northern sea otter was observed there during the 2008 surveys.

There will be construction-related impacts (such as increased turbidity and sedimentation) on the high-density kelp habitat located at the eastern end of the fill footprint off the end of Runway 25. These impacts will be minimized through the use of BMPs, and this habitat is expected to remain intact following construction. Implementation of the proposed action could reduce existing otter use of the high-density kelp habitat on a short-term basis because of construction noise and disturbance, which will result in direct effects on the species. It is unlikely that noise, either airborne or underwater, would directly harm diving species like the sea otter because observer protocols stipulated by USFWS (2012a) will be implemented within a 300-meter hazard area. No blasting will occur in the Project Area. Coastal hydrodynamic modeling completed for the EIS indicates that following construction, there will be no substantial changes in sediment dynamics or wave scour in areas used by otters (Coastline Engineering and Dynamic Solutions-International 2009 and 2012; also included in the EIS Water Quality Appendix). Thus, following construction, adjacent waters will again be suitable for otter use.

The northern sea otter preys on mussels, an invertebrate species that was observed in the southern end of the Project Area during 2008 field surveys, including on armor rock at the end of Runway 36. It is likely that mussels will colonize the new armor rock at the end of the RSAs in the long term (10–15 years) in similar quantity and quality as occurs on the existing armor rock. Over time, kelp species may colonize the subtidal armor rock.

Although the proposed action will increase barge traffic in the Action Area during construction, it is not likely to have an adverse effect on sea otters due to conservation measures outlined in Section 2.3. Because sea otters generally occur in shallow water areas near the shoreline, barge speeds in these areas will be slow in order to minimize potential ship strikes. Barges will follow USFWS *Boat Operation Guidance to Avoid Disturbing Marine Mammals* (2012b) to minimize effects to marine mammals. Barges and tugboats will follow standard BMPs for vessels to minimize the potential for oil or fuel spills (such as having an oil spill prevention plan).

Table 3. Summary of Direct Impacts to Northern Sea Otter Critical Habitat from Runway Safety Area Improvements

Proposed Action	Northern Sea Otter Designated Critical Habitat Affected (in acres)	Percentage of Critical Habitat in the Project Area Affected by Proposed Action
Runway 7/25: Extend Runway end 25 runway safety area (RSA) landmass by 600 feet and install EMAS	11.0	3.5%
Runway 18/36: Extend Runway end 36 RSA landmass by 600 feet, shift Runway end 18 by south 240 feet, and install 40-knot EMAS on existing pavement	8.4	2.7%
Combined Runway Actions	**19.4**	**6.2%**

Source: Field surveys by SWCA in 2007 and 2008 as described in the Technical Report (SWCA 2009).

5.1.1 Effects on Northern Sea Otter Critical Habitat

The Action Area includes approximately 23,816 acres of designated critical habitat for the northern sea otter. The proposed action will result in the net removal of 19.4 acres of this designated critical habitat.

The PCEs within this 19.4 acres of critical habitat that will be filled by the proposed action are described in Table 4. These PCEs will be lost within fill footprints of the proposed RSA expansion areas. Overall, the proposed action will have direct negative effects on northern sea otter critical habitat.

Table 4. Northern Sea Otter Primary Constituent Elements Affected by the Proposed Action

Primary Constituent Elements (PCEs)	Effect
(1) shallow rocky areas less than 6.6 feet deep where marine predators are less likely to forage	5.4 acres filled
(2) nearshore waters within 328.1 feet of the mean high tide line	19.4 acres filled
(3) kelp forests in water depths less than 65.6 feet that provide protection from marine predators	11.8 acres occur in areas where kelp presence ranges from 10% to 50% cover
(4) prey resources	Prey resources will be impacted by the removal and modification of the PCEs in the Action Area. It is likely that prey, such as Pacific blue mussels, will continue to be present in sufficient quantity and quality to meet the needs of the northern sea otter in the Project Area during implementation and upon completion of the proposed action.

5.2 Steller's Eider

Airport point-count surveys resulted in 24 observations of Steller's eider within 800 feet of Runway end 25. There were 658 observations of Steller's eiders located greater than 800 feet from the end of the runway. Many of the Steller's eider prey species (small marine invertebrates, mollusks, crustaceans, and small fish) reach their highest densities in kelp forests (see Map 4). Thus, the permanent removal of the kelp beds (ranging from 10% to 50% cover) at the end of Runway 25 will have direct, negative effects on habitat for this species.

Although there were large numbers of Steller's eiders observed during the winter off Runway ends 18 and 36 (1,048 and 746 observations, respectively), the majority of these birds were located greater than 1,200 feet from Runway end 18 and greater than 800 feet from Runway end 36. There were 120 Steller's eiders observed within 1,200 feet of Runway end 18 during the winter 2008 Airport point-count surveys. There were no Steller's eiders observed within 600 feet of Runway end 36 during any season of the 2008 surveys. Eider prey species are common in the soft-bottomed intertidal area from the mouth of the Buskin River to Runway end 18. The relative lack of eiders observed in this area during field surveys may be the result of chronic disturbance by aircraft or wildlife hazard management operations on the airfield. Nevertheless, implementation of the proposed action will cause a reduction in foraging habitat and in the local abundance of these eider prey species, which will result in direct, negative effects on this species.

Approximately 20.4 acres (<0.1% of the waterfowl winter concentration area in Chiniak Bay) will be removed as part of the proposed action (Table 5). Noise and human presence associated with project implementation will likely cause eiders to temporarily leave the Project Area resulting in short-term, direct effects on this species. Although construction will displace Steller's eiders, it is likely that they will return to the area and forage in the kelp forest remaining at the end of the new RSA once construction-related activities cease. The indirect effects of habitat loss and surface disturbance on Steller's eider will include potential displacement of individuals from foraging habitats to other areas and habitats of unknown quality. Displacement of individuals of this species to lesser quality habitats will likely result in a reduction in food and prey availability due to increased animal density (Bender et al. 1998). The proposed action will also result in the initial removal of intertidal rocky shore habitat at the end of Runway 36, which supports Pacific blue mussels and other macroinvertebrate prey species used by eiders. The removal of this rocky shore habitat will have direct effects on the Steller's eider resulting from reduced food resources at the end of Runway 36.

Table 5. Summary of Direct Impacts to Steller's Eider Habitat from Runway Safety Area Improvements

Proposed Action	Steller's Eider Habitat Affected (in acres)	Percentage of Habitat in the Project Area Affected by Proposed Action
Runway 7/25: Extend Runway end 25 runway safety area (RSA) landmass by 600 feet and install EMAS	10.8	3.4%
Runway 18/36: Extend Runway end 36 RSA landmass by 600 feet, shift Runway end 18 by south 240 feet, and install 40-knot EMAS on existing pavement	9.2	2.9%
Combined Runway Actions	**20.4**	**6.3%**

Source: Field surveys by SWCA in 2007 and 2008 as described in the Technical Report (SWCA 2009).

5.3 Yellow-billed Loon

No yellow-billed loon observations were made during Airport point-count surveys or boat-based surveys; however, potentially suitable habitat for the yellow-billed loon does exist in the Action Area, and, though rarely observed, individuals are believed to occur in the area during the spring, fall, and winter (MacIntosh 1998; personal communication between Spencer Martin, SWCA, and Richard MacIntosh 2009). Approximately 20 acres (<0.1% of potentially suitable foraging habitat in the Action Area) will be removed as part of the proposed action (see Table 5). Noise and human presence associated with project implementation will cause individual loons to leave the Project Area during the construction period. Although construction will displace yellow-billed loons, it is likely that they will return to the area once construction-related activities cease. The direct effects of the proposed action on the yellow-billed loon include habitat loss, the temporary displacement of individual birds, and the removal of prey habitat resulting from reduced food resources at the ends of Runways 25, 18, and 36. The indirect effects of the proposed action on the yellow-billed loon include potential displacement of individuals from foraging habitats to other areas and habitats of unknown quality.

5.4 Kittlitz's Murrelet

No Kittlitz's murrelet observations were made during Airport point-count surveys or boat-based surveys; however, potentially suitable habitat for the Kittlitz's murrelet does exist in the Action Area. Approximately 20 acres (<0.1% of potentially suitable foraging habitat in the Action Area) will be removed as part of the proposed action (see Table 5). Noise and human presence associated with project implementation will cause individual murrelets to leave the Project Area. Although Kittlitz's murrelet individuals may be displaced during construction, it is likely that they will return to the area once construction-related activities cease. The direct effects of the proposed action on the Kittlitz's murrelet include habitat loss, the temporary displacement of individual birds, and the removal of prey habitat resulting from reduced food resources at the ends of Runways 25, 18, and 36. The indirect effects of the proposed action on the Kittlitz's murrelet include potential displacement of individuals from foraging habitats to other areas and habitats of unknown quality.

5.5 Cumulative Effects

Cumulative effects include future local, private, state, or tribal actions that are reasonably certain to occur in the Action Area. Future federal actions that are not related to the proposed action are not considered in this cumulative effects analysis because they will require separate Section 7 consultations under the ESA. The Action Area is located within the Kodiak Island Borough, which covers 4.8 million acres of land, including tidelands and submerged lands. Nearly 71% of the borough is federally owned (3.4 million acres), and much of that area consists of public lands managed by the National Park Service and the USFWS. Of the remaining land in the borough, approximately 675,000 acres (14.1%) is owned by native corporations and villages, 639,000 acres (13.3%) is state land, 70,000 acres (1.5%) is owned by the Borough, and the remaining 16,000 acres (0.3%) is private land.

Current and future actions that are non-federal and that may affect federally listed species in the Action Area are the construction of the St. Herman's harbor drydock. Due to the small size of the harbor drydock footprint relative to the amount of marine habitat in the Action Area, it is unlikely that this project will change the magnitude of effects to federally listed species when considered in aggregate with effects of the Kodiak Airport expansion.

When considered in combination with past, present, and reasonably foreseeable state and private actions that have taken place or will take place in and adjacent to the Action Area, the cumulative impacts of this project may affect, but are not likely to adversely affect the northern sea otter and its critical habitat, Steller's eider, yellow-billed loon, and Kittlitz's murrelet. This conclusion is drawn because the habitat affected is not unique and the quantity of the affected habitat is small relative to the amount of similar marine habitat in the Action Area. Though these species may be displaced from the affected area, they are capable of accessing the abundant food resources in Chiniak Bay and surrounding areas and will not have to travel long distances or expend high amounts of energy to gain access to alternative foraging areas.

6 CONCLUSION AND DETERMINATION

6.1 Northern Sea Otter

Noise and human presence associated with project implementation will cause individual otters to leave the Project Area temporarily. The project will result in the removal of a small percentage of potentially suitable foraging habitat off Runway ends 25 and 36. Thus, the proposed action **may affect, but is not likely to adversely affect** northern sea otter or its designated critical habitat for the following reasons:

- The impacts to food resources outside of the fill areas will be short term.

- Northern sea otters in the Airport area are capable of accessing the abundant food resources in Chiniak Bay and will not have to travel long distances or expend high amounts of energy to gain access alternative forage.
- The quantity of primary habitat components that are affected by the Kodiak Airport project is small relative to those available to sea otters in the area.
- The current population level is small enough to expect that short-term displacement of animals due to disturbance or loss of food resources will not result in harm from intraspecific competition for alternative resources.
- The affected area is not known to provide unique resources relative to the adjacent habitat.
- Observers will be on-site to stop noise-generating work if such work might disturb northern sea otters.
- Boat and barge operations will follow USFWS's *Boat Operation Guidance to Avoid Disturbing Sea Otters* (USFWS 2012b) to minimize impacts to marine mammals.
- The effects of the loss of food resources and kelp beds are not expected to result in reduced survival or reproduction of any individual sea otters.
- There is a sufficiently low probability that the degradation of water quality due to release of sediments or contaminants associated with the project will result in harm or injury to a sea otters.
- Function and conservation role of the affected critical habitat unit would not be adversely affected.
- Only a small number of individuals relative to the overall population size will be affected.

6.2 Steller's Eider

Construction activities associated with the proposed action will result in the permanent removal of Steller's eider winter foraging habitat. Noise and human presence associated with project implementation will cause individual eiders to leave the Project Area temporarily. Due to the small percentage of Steller's eiders in the Action Area belonging to the threatened Alaska breeding population, combined with the small area of foraging habitat affected by construction of the RSA off of Runway ends 25 and 36, the effects on federally listed Steller's eider individuals and potentially suitable habitat are likely to be minor. Thus, the actions associated with the proposed action **may affect, but are not likely to adversely affect** Steller's eider for the following reasons:

- The impacts to food resources outside of the fill areas will be short term.
- Steller's eiders in the Airport area are capable of accessing the abundant food resources in Chiniak Bay and will not have to travel long distances or expend high amounts of energy to gain access alternative forage.
- Observers will be on-site to stop noise-generating work if such work might disturb Steller's eiders.

6.3 Yellow-billed Loon

Construction activities associated with the proposed action will directly impact yellow-billed loon foraging habitats. Noise and human presence associated with project implementation will cause individual loons to leave the Project Area temporarily. Because of the small percentage of potentially suitable foraging habitat affected by construction of the RSA off of Runway ends 25 and 36 the effects on yellow-billed loon individuals and potentially suitable habitat are likely to be minor. Thus, the actions associated with the proposed action **may affect, but are not likely to adversely affect** the yellow-billed loon.

6.4 Kittlitz's Murrelet

Noise and human presence associated with project implementation will cause individual murrelets to leave the Project Area temporarily. Construction activities associated with the proposed action will directly impact Kittlitz's murrelet foraging habitat. Because of the small percentage of potentially suitable foraging habitat affected by construction of the RSA off of Runway ends 25 and 36 the effects on Kittlitz's murrelet individuals and potentially suitable habitat are likely to be minor. Thus, the actions associated with the proposed action **may affect, but are not likely to adversely affect** Kittlitz's murrelet.

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